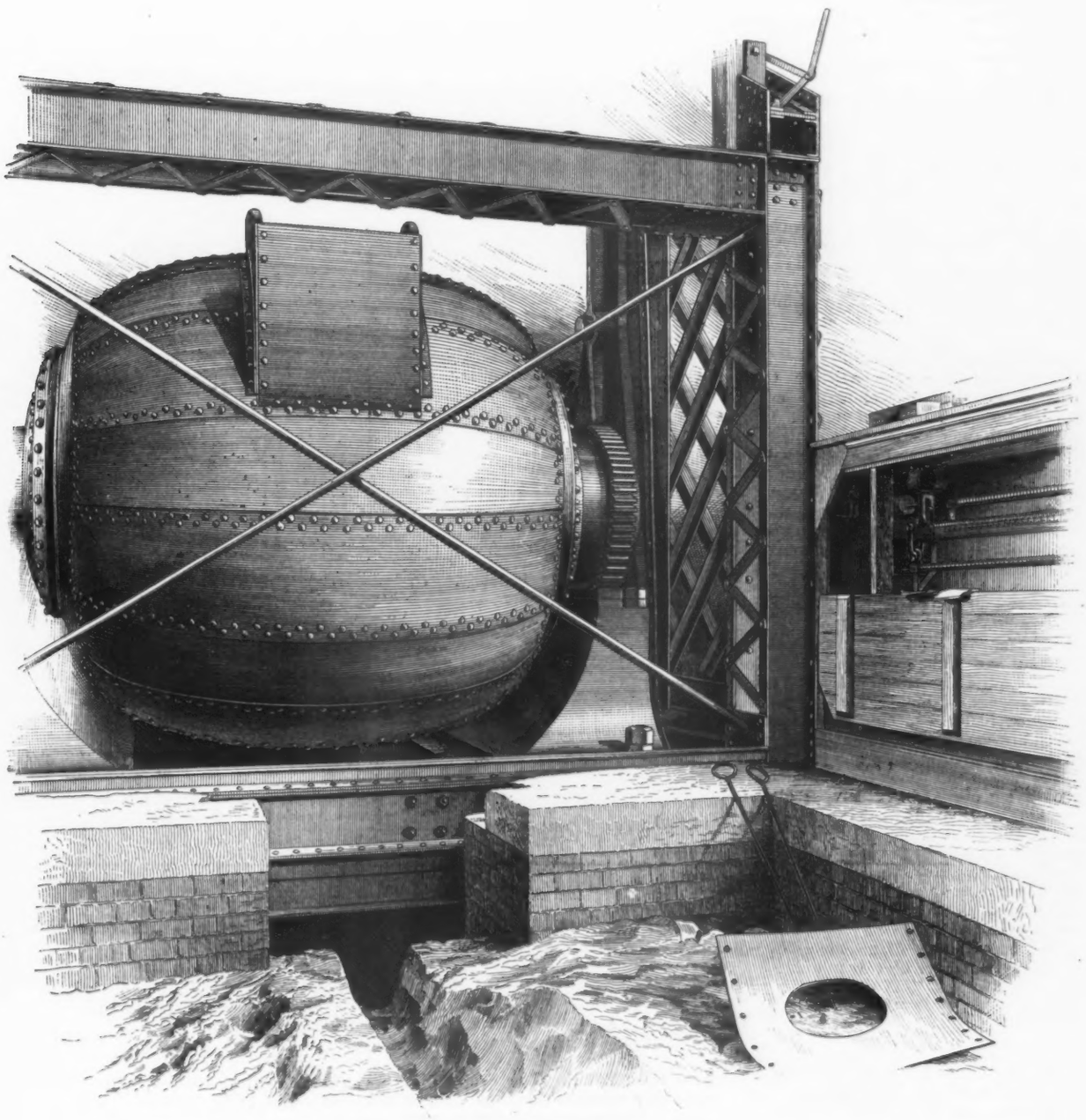
THE IRON AGE

THURSDAY, SEPTEMBER 24, 1891.

The Forsyth 100-Ton Scale.

Some time since Edward L. Ford, general manager of the Youngstown Steel Company, designed a conveyor or holder for fluid metal, in connection with which it was necessary to build a heavy scale. This was constructed by the Forsyth Scale Company, of Youngstown, Ohio, to whom we are indebted for the necessary drawings of both the conveyor and the scale. In the bottom of a deep pit is placed a hydraulic ram to handle the conveyor H, Fig. 2, the capacity of the conveyor being 40 tons. The conveyor is lowered on the scale, is filled and is then weighed. It is hoisted in the guide ways until it reaches its proper location, the metal being poured out over the mouth.

The design of the scale proper is shown in the accompanying drawings, Figs. 2, 3 and 4, but it should be noted that in the drawing the beam is placed as at first designed. Subsequently, for convenience sake, it was put in another position on the opposite side, as shown in the engraving prepared from a photograph. Four main levers are A A, two second levers being B B, while the two third levers are marked C C. The two extension levers F F connect with the counter lever not shown in the drawing, which in turn connects with the beam G in the beam box. The platform of the scale is shown at D. As already stated, the conveyer H is lowered on the platform of the scale D, when the metal is allowed to flow in on the blast furnace. After being loaded and weighed it is elevated by the ram or plunger E to the position in which it is poured out. The fact that serious loss of life might result from any breakage made it necessary to aim at special strength in construction; therefore the beams were made of rolled steel and the forgings of Norway iron. Practically all the metal is taken in the conveyor or holder that the Tod furnace makes in 24 hours—about 160 tons. At each cast about 60,000 to 75,000 pounds is run into the holder, from which it is poured as it is needed into the Krupp washer of the plant. In connection with the holder we may state that owing to its construction no trouble has been experienced in holding the metal from ten to twelve hours without perceptible chilling. This, of course, is not the regular practice, but some time since, owing to an accident to the machinery, Mr. Ford was forced to carry the metal in the holder for this length of time.



THE FORSYTH 100-TON SCALE, FOR THE FORD LIQUID METAL HOLDER.

In the courts of Pittsburgh last week a bill in equity was filed by James P. Witherow, engineer and contractor of that city, against N. A. Didier. It is alleged that

on November 11, 1889, the two formed a partnership to develop by experiments a process for manufacturing tuyeres, coolers and fish plates, &c., by electricity, and, if successful, to procure patents. The experiments were made by Didier, and Witherow furnished the money. To conduct the experiments a dynamo was purchased from the Ft. Wayne Electric Company. On September 30, 1890, it was shown that the original device had proven a hopeless failure, and the partnership dissolved. The defendant, however, now has possession of the assets, the main portion of which is the dynamo valued at $2500, which has not been paid for. He is using the dynamo and refuses to give it up. As a consequence the court is asked to restrain him from using the dynamo and to have the assets placed in charge of a receiver.

Machinery on the Pacific Coast.

The San Francisco *Commercial Herald* says: Machinery on the Pacific Coast, so far as the manufacturer is concerned, means practically San Francisco. Here the business of manufacturing machinery has been carried on in a more or less satisfactory way almost since 1849—since Peter Donahue first set up his forge on the shores of Mission Bay. The difficulties and the almost impossibility of the transportation of machinery hither in early days, and the utter impossibility of judging, as far off as the Atlantic Coast, what description of machinery was most needed for our mines and lumber mills, gave rise to the manufacture on this coast. For many a long year we were without a rival, and the business flourished. The opening up of the coast to the East by rail, however, slowly changed the old order, and little by little the inventive genius of the East came into competition with that of the Pacific Coast. The result has been that the business has not progressed as well as it might have, and that the manufacturers of the East have invaded our coast and city even with the products and appliances of the East. Here we have quite a large and valuable trade in Eastern engines, pumps, metal workings and miscellaneous machinery, and half a dozen firms are all the time engaged in the business of importation, principally by rail. In the face of this, however, Pacific Coast inventive genius and skill have resulted in retaining much of the trade in Pacific Coast hands, and in San Francisco foundries and machine shops many most valuable inventions have been perfected of late years, and are in demand not only on the coast, but in Mexico, South America, Australia and the islands of the sea.

The importations of machinery by rail for a few years have been as follows:

1887	9,787,900
1888	15,342,506
1889	15,603,090
1890	14,104,690

Here is a decided increase, though a slight decrease was noted in 1890. The value of this machinery may be estimated at about $1,000,000.

Harvey B. Chess of the Central Expanded Metal Company of Pittsburgh has taken out a permit for the erection of two cement two story and attic dwellings, to be erected on Aiken avenue, Pittsburgh. This will be a new departure in the building line, and perhaps the pioneers of many others of the same class. The exterior walls are to be of cement applied to expanded metal, and the lathing will be attached to ordinary wooden studding. The inside walls will also be plastered on the same metal, and the buildings will be entirely fire proof.

Distilling Apparatus for the Maine.

A successful test of the distilling apparatus for the new armored cruiser Maine was made last Monday by a board of United States naval engineers at the Davidson Pump Works, Brooklyn. The board was made up of Chief Engineers A. W. Morley and W. H. Heaton and Assistant Engineer Albert Moritz. The apparatus consists of two evaporators and two distillers, with their accessories, and according to contract must have a combined capacity of 5000 gallons of potable water per 24 hours at a temperature of not more than 90° F., when the cooling water is taken in at a temperature of 60° F. The evaporators are made with shells of plate steel with welded seams. The heads are of cast iron and the coils of copper, tinned inside and out. They are fitted with safety valves, steam gauges, glass water gauges, gauge cocks, salinometer pots, and blow valves. They are also fitted with automatic traps. The distiller shells are of brass, and have coils of copper thoroughly tinned on both sides. A charcoal filter is attached to each distiller and provision is made to aerate the steam used for the distilled water.

To meet all the requirements the contractors, N. F. Palmer, Jr., & Co. called on the Davidson Pump Works to construct the Baird combined evaporators and distillers. The arrangement is simple in form, and it will be a rare occasion, it is thought, when it will be found necessary either to buy drinking water for the Maine's crew or to feed the boilers with anything but pure water. Monday's test demonstrates that distilled water can be supplied aboard war ships in necessary quantities, and this fact will do much to relieve the sickness arising so frequently from crews being compelled to drink the water of every port visited. During the test salt water was used, and it was found that one distiller and evaporator produced without trace of salt 3838 gallons of water per day. The nitrate of silver test was employed. This result does not represent the maximum performance, but is more than one and one-half times the requirement. The evaporator, distiller, filter and charcoal weigh 1880 pounds.

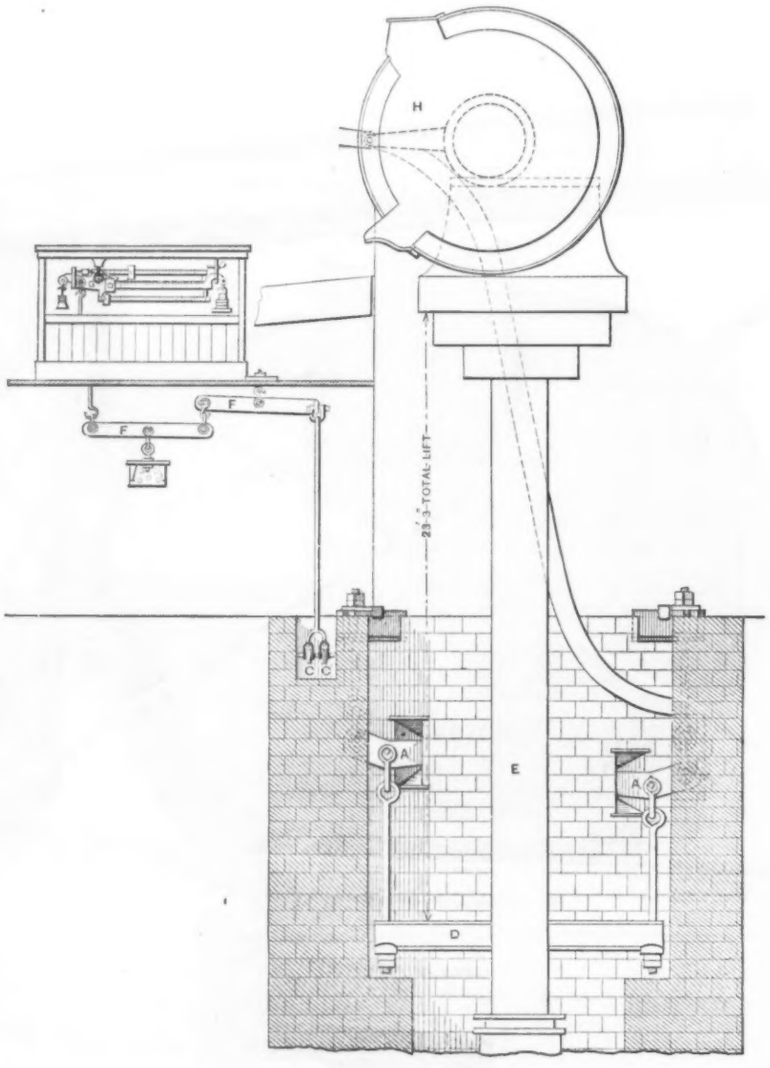


Fig. 2.—Vertical Section of Scale and Holder.

THE FORSYTH 100-TON SCALE.

The Wage Committee of the Window Glass Manufacturers and Workers met at the office of R. C. Schmertz & Co. at Pittsburgh last week, and decided that work will be resumed at last year's prices. The workers abandoned the demand for an increase in the gatherers' wages of 5 per cent., while the manufacturers agree to resume operations without making any changes in the working rules. The Wage Committee will meet some time during the present week to decide upon a date to start up the fires. It is believed that operations will not be resumed until about October 15 next. The condition of trade is reported by the manufacturers to be

very discouraging, the orders which should have been received by this time have not yet been booked, and the delay is charged upon the strikes which occurred during the spring and summer at various points, which almost entirely restricted building operations. They hope, however, that an improvement in the trade will soon be noticed.

Electric Conductivity of Steel.

Louis Campredon reports in *Le Genie Civil* the results of a series of experiments made to ascertain the relations between electric resistance and chemical compositions of steel. The wires were No. 17, 3 mm. diameter, the results being embodied in the following table:

	Carbon.	Silicon.	Sulphur.	Phosporus.	Manganese.	Total.	Electric resistance. Ohms.
1....	0.090	0.020	0.050	0 030	0.210	0.410	127.7
2....	0 100	0.020	0.050	0.040	0.240	0.450	133.0
3....	0.100	0 020	0.060	0.040	0.280	0.480	137.5
4....	0.100	0 020	0.050	0.050	0.310	0.530	140.3
5....	0.120	0.030	0.070	0 050	0.330	0 600	142.7
6....	0.110	0.030	0.060	0.000	0.350	0.610	144.5
7....	0 100	0.020	0.070	0.040	0.400	0.630	149.0
8....	0.120	0.020	0.070	0.070	0.400	0.680	150.3
9....	0.110	0.030	0.060	0.000	0.490	0.750	176.0
10...	0.140	0.030	0.060	0.080	0.540	0 850	173.0

An examination of these series of figures shows that the purer and softer steel is the better is its electric conductivity, and, furthermore, that manganese is the element which most influences the conductivity.

The Collector of Customs at Philadelphia has been authorized to allow for the imported seamless copper boiler tubes used in the construction of locomotives built by the Baldwin Locomotive Works of Philadelphia, upon due exportation of such locomotives, a drawback equal to 99$\frac{3}{10}$ per cent. of the duty paid on the imported tubes, less the legal deduction of 1 per cent.

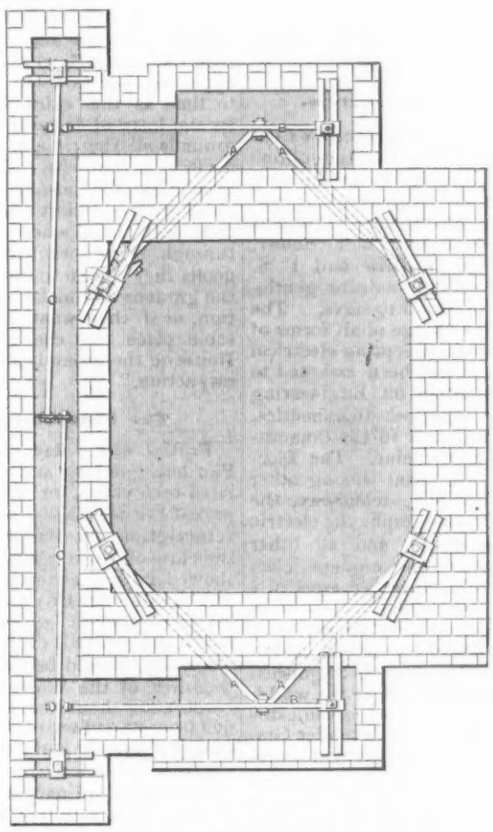


Fig. 3.—Plan of Scale.

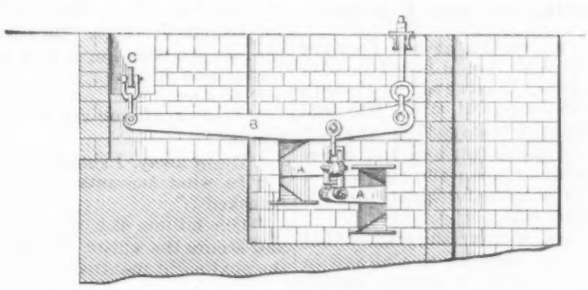


Fig. 4.—Section of Scale.

THE FORSYTH 100-TON SCALE.

An English newspaper reports that Josiah Guest, Victoria and Albert Iron Foundries, West Bromwich, England, has just shipped to the United States a seamless steel tube mill, being the second sent out recently. The mills have been constructed on the same principle as those supplied in Birmingham and the surrounding district for the bicycle and boiler trades.

The Steel Company of Scotland, lost on the operations of the last fiscal year £30,917.

WORLD'S FAIR NOTES.

Work on the World's Fair buildings at Chicago is being pushed right ahead, and before snow flies the Mines and Mining, Women's, and Transportation buildings will be under roof.

The dome of the Horticultural Building will be one of the finest pieces of architectural work on the grounds, and as the Park Commissioners contemplate retaining it after the fair is over, making it a permanent feature of Jackson Park, the Committee on Grounds and Buildings and the Chief of Construction are considering the advisability of making the foundations of masonry. The contractors generally have been somewhat delayed in their work thus far, but as soon as the dome is completed, and that force relieved, they intend to put on and work three shifts of men, each shift working eight hours per day.

The foundations have been completed for the Women's, Mines and Mining and Transportation buildings, and the working force is now engaged on the superstructure. The work of laying foundations has begun for the Manufactures and Liberal Arts, Agricultural, Administration and Horticultural buildings, and the Electric Lighting and Power Station.

Two thousand piers are now placed for the foundation work of the Manufactures Building. Lumber for it is coming on in great quantities, and several carloads of timber are put through the sawmills daily. The aggregate quantity of lumber for this great building, according to the original specifications, was about 12,000,000 feet. At least 15,000,000 feet will be necessary to carry out even the wood work of this contract according to the plans for the enlargement ultimately approved. It is expected that the contractors will be able to develop a sufficiency of plant and machinery enabling them to run through the sawmills a daily average of ten carloads of lumber. With 100,000 feet a day the carpentry contract can be pushed along as rapidly as necessary.

The west side of the entire structure of the Mines and Mining Building, 700 feet in length, is being rapidly made up, and a considerable section of it is now almost ready for exterior covering. The iron work is already a noticeable feature. Six of the great iron columns or supports are in place, and the plant rigged for elevating the monster 64-foot iron columns which are to support the central arch and main roof. Upon the adjacent Electricity Building the foundation work is nearly completed. The system of working is somewhat novel. After the foundations have been constructed a floor is laid over all, giving the men a smooth surface on which to work and greatly facilitating progress.

The naval exhibit, which will represent a line of battle ship, is well under way, the foundation and flooring having been laid, and is now ready to receive the superstructure. This exhibit is located at the extreme northern end of the ground, just inside a breakwater built to protect it. A cement walk, 10 feet in width, is being constructed, running from this north pier to the lagoon at the southern limit, skirting the lake the entire length of the grounds. The boarding houses built for the accommodation of the workmen are substantial buildings and not mere shanties, as might be supposed because of their erection for company use. There is also a fire station on the grounds, equipped with engine, hose cart, and all the paraphernalia of the department and manned by a strong and efficient force. A complete system of water pipes and mains is being laid throughout the grounds, which when completed will be supplied from the new pumping station. The work of

constructing the buildings is of such magnitude that several of the contractors have found it profitable to erect saw mills on the ground. The progress made is highly gratifying, and gives promise that everything will be completed and in readiness to receive the world when the exposition is opened.

In the Modeling Department.

Miss Enid Yandell, a graduate of the Cincinnati Art School, is modeling at Jackson Park the caryatides for the Women's Building. Miss Yandell is a sculptor, and she has for several weeks been trying to mold a beautiful woman out of plain Jackson Park clay. When completed Miss Yandell's model will be 6 feet high.

In the same modeling department where beautiful women are being molded, M. Bonet, in charge of all the work, has a force of male sculptors engaged on heroic figures and emblematic groups which are to form the most conspicuous features of ornamentation of several of the buildings. Besides the statuary proper, there are models and casts for the bas reliefs, representing a great variety in foliage, medallions, columns and friezes. Next door to Miss Yandell there is being molded by Carl Rohl Smith a statue of Benjamin Franklin, 14 feet high. The figure is modeled to represent Franklin with his famous kite, which he holds in his right hand, while he watches the clouds and the lightning. This statue is to be placed in the main entrance to the Electricity Building. Two female figures, each 10 feet in hight, are being modeled for the Mines Building. All the modeling for the Electricity Building, except the pediment, is finished; that for the Horticultural Building is nearly finished, and the general ornamentation for the Women's Building, except the caryatides, is completed.

No Smoke or Soot.

There is to be no smoke at the World's Fair. This was decided upon last week by the Committee on Grounds and Buildings, when it arrived at the informal conclusion that anthracite coal should be burned in all the furnaces connected with the World's Fair. The monster power house, which will generate steam in 28,000 horse-power boilers, it is intended shall emit no smoke. For several months the Construction Department has had under advisement the adoption of some fuel which would mitigate the smoke nuisance. Fuel oil was at one time considered, and again a new process of creating gas from coal was taken up, but according to Acting Chairman Ketcham the committee has decided that the best means of averting smoke will be to adopt the use of hard coal. "It will be more expensive," said he, "but in the end it will be much cheaper than to have the fine exhibits of the Art Palace and the Manufactures Building subjected to the damage that would be caused by soot-laden atmosphere." The power house will be located in the southwest portion of the grounds, and it has been shown that prevailing winds are from the southwest. This, if soft coal were used, would spread a sooty deposit all over the grounds.

The Director-General's Cabinet.

Director General Davis has organized his cabinet. It is a new feature in the World's Fair management, and the Director-General hopes it will prove of great value in the conduct of affairs.

The cabinet consists of the chiefs of all the departments and the Director-General. There were present at the first meeting Chiefs Walker Fearn of the Department of Foreign Affairs, W. I. Buchanaan of the Department of Agriculture, F. J. V. Skiff of the Mining Department, Willard A. Smith of the Department of Transportation, J. M. Samuels of the Department of Horticulture, J. A. Allison of the Department of Manufactures, F. W. Putnam of the Department of Ethnology, and S. H. Peabody of the Department of Liberal Arts. Some of the chiefs were unavoidably absent. F. J. V. Skiff was made secretary of the cabinet, and after this preliminary business, the members took up the discussion of World's Fair matters. This first meeting was mostly general talk, although it was decided that 50,000 copies of the system of classification should be issued.

Colonel Davis said, after the meeting, that he hoped for good results. "Hereafter," he said, "we shall meet every Tuesday afternoon and make a weekly report to the Executive Committee of the Board of Directors. Each chief will announce at our meetings what he has accomplished during the week."

For an Electrical Congress.

President Bonney of the World's Congress Auxiliary has appointed the following committee to make the preliminary arrangements for an electrical congress: Prof. Elisha Gray, chairman; Col. Robert C. Clowry, vice-chairman; B. E. Sunny, C. H. Summers, G. H. Bliss and F. S. Gorton. Several other prominent gentlemen have been appointed to serve. The committee will have charge of all forms of electrical application, excepting electrical engineering, which has been assigned to the General Committee on Engineering Congresses, and electrical therapeutics, which has been assigned to the Committee on Health and Medicine. The Electrical Congress will deal among other things with telegraphy, telephony, the phonograph and telautograph, the electric light, the electric motor, and all other practical applications of modern electricity, except those otherwise especially assigned. The local committee will be assisted in their work by an Advisory Council of the World's Congress Auxiliary, consisting of the most distinguished electricians in different parts of the world. The names of Cyrus Field, of ocean cable fame, Thomas A. Edison, Alexander Graham Bell, Sir William Thomas, and scores of others distinguished in this particular field, though less widely known throughout the world, will doubtless appear in the council.

For Handling the Fair Exhibits.

During the conference at the Treasury Department at Washington last Thursday between Secretary Foster and the World's Fair Commissioners great stress was laid upon the means for transporting exhibits to the fair. After a full and free interchange of opinions upon the subjects of particular interest to the foreigners present, Secretary Foster said:

"With regard to your suggestion that goods should go forward to Chicago in sealed cars, it is intended that they should first come into the custody of the United States customs officers at Chicago. I want to ask you this: Are our regulations in respect to receiving goods at New York satisfactory? They are simple. It is simply this: The goods come consigned to some one with bill of lading representing the person entitled to receive these goods when they arrive at New York. That person makes entry for transportation without breakage to Chicago. Then the customs authorities have knowledge of the goods. The goods are examined; so many packages with marks and numbers. Then, under the charge of the customs officers, they are removed from the vessel and put on cars and sealed with the customs seals. When the goods come to Chicago they will be in the custody of the Collector of Customs until they are entered at the exhibition. It is possible and practicable that they can be run down to the exhibition ground at once. Then it is contemplated to have sufficient force of entry clerks and inspectors there to rapidly make entry of these goods.

"The suggestion has been lately made to the Secretary of State that he suggest to exhibitors that they have bills and invoices of their goods made before they leave, as it will expedite the checking of them. The Collector at New York should have one and the Collector at Chicago another. When they arrive at Chicago we propose to have these entries made as rapidly as possible, and then they will be sent at once where exhibitors want them at the place of exhibition, and then we propose to have officers enough there so that they may not be unduly embarrassed. Each man shall have charge of one section, and the goods will be taken out and checked off. It is required by our law that these goods be appraised, and this will be done from time to time as the exhibition goes on. A special force of inspectors will be on the grounds all the time in conference and in communication with the exhibitors. And from time to time, if desired, they can check up the exhibit and see that it is intact, and then, when the exhibition is through, if they want to sell any of these goods they can go to the Custom House on the grounds and make ready for examination, or if they want to export them to some place they can go to the Custom House on the grounds and take the necessary action."

The Financial Question.

Friday was a day of joy at World's Fair headquarters, and directors congratulated each other, for Treasurer Seeberger passed the $3,000,000 limit in collecting subscriptions on the capital stock. At the close of the day's business the records showed a total collection of $3,001,083, and the Chicago City Council will now be asked to dispose of the $5,000,000 of bonds the proceeds of which it voted last December should be turned over to the treasurer of the World's Fair when the corporation should have collected $3,000,000 from its subscribers. This it did yesterday afternoon and City Controller May will shortly be asked to sell the bonds.

More than ordinary importance, from a World's Fair standpoint, attaches to the collection of $3,000,000. It means an additional amount of $5,000,000 of ready money, for which there is need. Director Lyman J. Gage, when informed that the $3,000,000 limit had been passed, smiled and said:

"So I hear."

"When shall you ask for the sale of the bonds?"

"Right away, I should say."

"In what amounts should the money be asked?"

"One million at a time, I should think, and secure the entire $5,000,000 within the next eight months."

The Engine Samson.

The Department of Transportation Exhibits is offered one of the most valuable relics of the early days of railroading in this country and will doubtless secure it. The old locomotive, Samson, built in England in the thirties by the celebrated Timothy Hackworth and brought to this country in 1838, is still in existence and in working order. Accompanying it is a quaint old passenger car built in imitation of a stage coach, both standing on some of the old scolloped or fish-belly rails. The engineer who first ran the locomotive is still alive, and if still living at the time of the World's Fair may accompany the venerable engine.

Brevities.

Herr Wermuth, Imperial Commissioner from Germany, and Sir Henry Trueman Wood and James Dredge of the British

Royal Commission, are now in Chicago, to make preliminary arrangements for their respective countries.

Two anchors, supposed to have been used by Columbus on his first voyage of discovery, it was announced would be on exhibition at the fair. One of these anchors was found by Commissioner Ober on the coast of Hayti. It had been found by natives, and had been used by them as a cross beam for an open well. A model was sent to a Paris antiquarian, who pronounced it that of a fifteenth century anchor.

The Ground and Buildings Committee have let a $4000 contract to McArthur Brothers for two railroad tracks to run the entire length of the Electricity Building, the tracks to be used for installation purposes.

The manufacture of "staff" for the exterior covering was commenced last week, and it will be first used in filling in a section of the Women's Building.

At the meeting of the Committee on Grounds and Buildings on Friday the Chief of Construction was authorized to ask for bids for the construction of the Fine Arts Building.

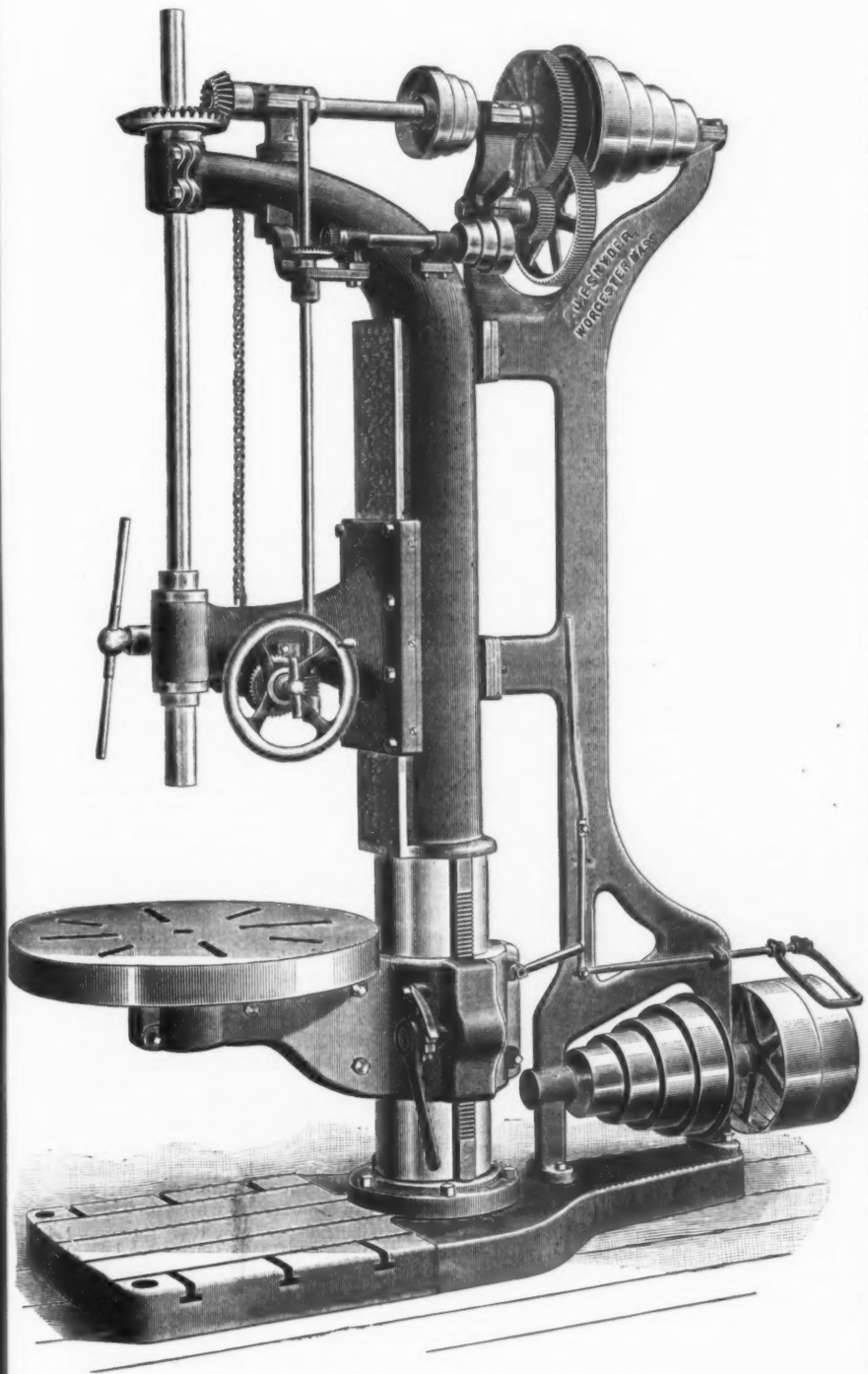
Director-General Davis has suggested to the Committee on Buildings and Grounds that a bonded warehouse be secured for the reception of South American exhibits, which are beginning to arrive at Eastern ports.

The Grounds and Buildings Committee has approved the sites granted for about 20 of the States. The formal acceptance of Ohio of its site was received.

This week Executive Commissioner Whitman of Pennsylvania will issue circulars to all the architects of the State, detailing the general rules for observance by those submitting designs for the Pennsylvania World's Fair Building. The designs must all be in by November 1.

Chief of Construction Burnham has advertised for bids for the construction of the Forestry Building. This is to be one of the unique structures of the fair. It will be on the rustic order, and the posts of the colonnade which will surround the building will be logs contributed by every State and Territory.

Dr. J. A. Hornsby, secretary of the Department of Electricity, will be sent to Europe to gain information with regard to the securing and installation of electrical exhibits. Dr. Hornsby goes upon the recommendation of Professor Barrett, chief of the department, and Colonel Clowry, chairman of the Committee on Electricity. Dr. Hornsby will first visit Frankfort, Germany, where an International Electrical Exposition is now being held.



THE SNYDER 36-INCH UPRIGHT DRILL.

The Snyder Upright Drill.

The accompanying engraving represents a new 36-inch back-geared, automatic-feed, quick-return upright drill, made by J. E. Snyder of Worcester, Mass. The tool is very heavy and is especially designed for doing heavy work. The spindle and head are both balanced by one weight, and by a patented quick return the head can be placed in any position on the face of the column instantly without disconnecting any gears or requiring the use of a wrench. The spindle is made of crucible steel and the hole in it conforms to Morse taper Nos. 4 or 5, as may be desired. The cones are large and are placed as far apart as possible. The machine has an automatic drilling capacity of nearly 30 inches. The greatest distance from the spindle to the base is 54 inches. The total weight is 3600 pounds.

The steam yacht Vamoose is Herreshoff's latest marine wonder. The secret of her speed is the engine. It is the only quadruple-expansion engine ever put into a yacht, so far as known. It has five cylinders of the following diameters: A, 11¼ inches; B, 16 inches; C, 22½ inches; D, 22½ inches, and E, 22½ inches. Each cylinder is connected directly to the propeller shaft. The stroke is 15 inches. The propeller shaft is 5½ inches in diameter. The condenser, which takes the steam from these five cylinders, is 5 feet 3 inches long and 31 inches in diameter, containing 498 feet of 5 inch tubes. At the head of the condenser is a circulating pump, the little engine of which makes 800 turns a minute. The feed pump and the air pump reduce in a ratio of four to one. The engine, including its equipment, weighs 13 tons 1180 pounds. Power comes from the boiler in a steel supply pipe 5 inches in diameter. The boiler weighs 10¼ tons. It is of the Thorneycroft pattern, but was built by the Herreshoffs. It is 8 feet 4 inches long and 8 feet 6 inches in diameter. It contains three drums and 8504 running feet of cold drawn steel tubing. It has heating surface enough to easily supply the 800 horse-power which the engine develops. Forced draft is obtained by a fan, which works up to 1000 turns a minute, according to the amount of air wanted. The smokestack is 8 feet high above deck, with a diameter of 36 x 21 inches. The outer covering is of polished brass. The boat is lighted by electricity, which is generated by a Riker motor that makes 850 turns a minute.

The Kellogg Seamless Tube and Mfg. Company of Findlay, Ohio, have shipped over 50 tons of projectile tubing for the American Projectile Company of Lynn, Mass.

The October Meeting of the Mining Engineers.

The sixtieth meeting of the American Institute of Mining Engineers will be held at Glen Summit, Luzerne County, Pa., beginning Tuesday evening, October 6, and continuing for three days. The opening session and Wednesday morning and afternoon are given up to the reading and discussion of papers, to be followed by a camp fire in the evening, on the grounds of Gen. Paul A. Oliver, at Oliver Mills. Thursday is set aside for an excursion in the Wyoming region, lunching at Harvey's Lake, a session following in the evening. An excursion has been planned for Friday, including a visit to the iron breakers of Coke Brothers & Co., and to several collieries in the vicinity. An opportunity will be offered on Saturday to those who desire to visit Glen Onoko and the Switchback, Mauch Chunk. The following papers are announced, and special discussions are expected on "The Preparation and Utilization of Small Sizes of Anthracite Coal," and "The Practical Uses of Concentrated Iron Ores."

Electricity in Mining, as Applied by the Aspen Mining and Smelting Company, by M. B. Holt, Aspen, Col.

Electric Locomotives in German Mines, by Karl Eilers, Berlin, Germany.

The Manufacture of Liquid Sulphurous Acid in Upper Silesia, by Karl Eilers, Berlin, Germany.

A Chinese System of Gold Milling, by Henry Louis, Singapore, Straits Settlements.

The Utilization of Puddle Slag for Paint Stock, by Axel Sahlin, New York City.

The Florence Oil Fields, Colorado, by George H. Eldridge, U. S. Geol. Survey, Washington, D. C.

A Survey of the Planches de Plata Mines, Sonora, by Henry M. Stanley and Henry O. Flipper, Nogales, Arizona.

Co-ordinate Surveying, by Henry O. Flipper, Nogales, Arizona.

Cord-wood in the Matting Blast Furnace, by Herbert Lang, Mineral, Idaho.

The Bendigo Gold Field, by T. A. Rickard, Allemont, Isère, France.

Apparatus for the Manipulation of Iron and Steel Plates during the Process of Finishing, by Gram Curtis, Pittsburgh, Pa.

The Handling of Ingots and Molds in Bessemer Steel Works, by Gram Curtis, Pittsburgh, Pa.

Centrifugal Ventilators, by R. Van A. Norris, Wilkes Barre, Pa.

Tandem Tanks for Hoisting Water from Flooded Slopes, by J. H. Bowden, Wilkes Barre, Pa.

The Utilization of Anthracite Waste by Gasification in Producers, by W. H. Blauvelt, Philadelphia, Pa.

The Use of Magnetic Concentrates in the Port Henry Blast Furnaces, by N. M. Langdon, Port Henry, N. Y.

Lieut. G. N. Whistler, Fifth Artillery, in a report on the test of a cylinder built in accordance with the principles underlying the Brown segmental wire gun, says: "One point is, however, important to be noted: while the strength of a system to resist powder pressure is independent of the thickness of the liner when introduced with full initial compression, yet it is not safe to make a liner so thin that there is any danger of minute and imperceptible blow holes extending far enough through to weaken the metal." The test, as a whole, was exceedingly satisfactory. It is demonstrated beyond question that so far as circumferential strength is concerned, a gun constructed upon this principle will sustain a pressure of 57,000 pounds per square inch without any danger of enlargement of the bore. The working pressure of the 5-inch gun will be placed at 50,000 pounds per square inch, and as the bore is 44 calibers long, this will give a muzzle velocity of about 2500 foot seconds. The trustees are now at work turning out as rapidly as possible the experimental 5-inch gun.

Petroleum in Marine Furnaces.

The employment of petroleum for generating steam in the boilers of marine engines has been revived by the recent experiments with it on the English steamship Erros and the Italian vessels Castelfedando and Ancona. But the most successful use of petroleum as fuel has been on the English torpedo boat Sunderland, which has a displacement of 86 tons and a length of 137 feet. The boiler is of the ordinary locomotive type with web bottom, the furnace front being arranged to receive the oil burners, which are 31 in number. The liquid fuel used is pumped from the double bottom (the tanks which hold the oil) and discharged into a small cylindrical tank, where it is subjected to an air pressure of 35 pounds per square inch, and whence it flows direct to the burners.

In the fire room is an air compressor which discharges into cylindrical air tanks near the vessel's side, forming a group of four. The working pressure of air in these tanks is 40 pounds per square inch, and it is conveyed here for the purpose of disintegrating the oil as it leaves the burners. Each jet of oil gives a clear, bright flame, about 6½ feet long and 9 inches in diameter, if burning alone. When the jets are combined in the furnace there is a bright mass of fire about 2 feet from the furnace mouth to the tube plate. This flame entirely fills this portion of the furnace and gives forth neither smoke, smell nor sparks, so that neither soot nor dust is deposited in the tubes, and no cleaning is required. Special precautions are taken to avoid the bad effects of high temperature and rapid changes of temperature, and it is stated that these are so efficient that, though the boiler has been repeatedly forced very hard, there has not been a sign of leakage.

The Italian Government is continuing its experiments with oil fuel on vessels of war, and, while no definite information is afforded as to technical details, it would seem that satisfactory results have been obtained. The Peruvian Government has directed that the gunboat Santa Rosa be altered for burning oil in its furnaces. The British Admiralty are considering the advisability of burning oil fuel, but have not as yet decided what kind to use. The Navy Department will have some definite results on the use of oil fuel within the next few months, as it is the intention to have exhaustive experiments made with it by the Board of Engineer Experts at the New York Navy Yard.

The special advantages claimed for liquid fuel are: It has greater efficiency than coal, weight for weight; the manner of stowing it in the double or cellular bottom gives increased stability to the vessel and increase of available space for other purposes, now occupied for the stowing of coal; it will require a less number of fire room force than with coal fuel, and there is no ashes nor refuse from oil fuel. In maneuvering under steam, it may often be desirable to stop suddenly while at full speed and not to use the engines for some time. With coal fires this would be difficult, as they would have to be banked, and while lying dormant would become dirty; but with liquid fuel as many burners as necessary may be shut off when the engines are stopped, only enough being kept in operation to prevent the steam pressure from falling. When full power would be required it could be had at once with furnaces and everything clean and in good shape.

Models, Inspection and Gauges—I.

BY A. D. PENTZ.

In February, 1881, the writer was transferred to the factory of the Singer Mfg. Company, at Elizabethport, N. J., and told to take the gauges in charge, look after the inspection, improve the quality and not interfere with the production. The factory then was about 30,000 machines behind orders, which were increasing in excess of the capacity, which was then not far from 6000 a week. Of course at times the production was much larger than this—one week it was nearly 10,000—but at such times the drain on the surplus of parts was largely in excess of the production of such parts. These circumstances in view, it will be seen that the instructions given me were quite elastic, and for many months I did but little more than help push the factory, so as to get where the work on the quality could reasonably commence. At the end of about six months it was considered that the reforms should begin in earnest. At the same time it was decided to not attempt to reform the older styles of machines in design nor tools, but to raise the standard of their quality as much as possible. The idea of this was to leave the factory free to work on the orders, while the newer machines were to be improved in quality as fast as practicable. It should not be inferred that the older machines were poorly fitted, or that they operated badly, as neither of these assumptions would be true. On the contrary, the machines then made were, as sewing machines, excellent, and fully deserved the success they attained. While they were costly to put together, stiff and clumsy to handle, they lasted a long time, and being pinned in every part that affected the time, they gave their operators but little trouble. The newer machines were designed to retain all the excellences of the older ones, have larger capacity, run lightly, smoothly, silently and swiftly, be modern in mechanical principle and require no fitting in the assembling of the parts to make or repair them.

A Standard Model.

The first requisite to correct duplicate work is a well-made model. This is the point of demarkation. In one direction a poor model leads to work that will not assemble without expensive fitting, to tools and gauges that cannot harmonize and to results that differ as infinite possibilities differ. In the other direction a good model made to exact lines and angles, true surfaces, parallel alignments, correct distances and accurate measurements is a standard to which reference can be always had with the certainty of its sustaining the right and of its condemning the wrong. If the original models to which we worked had been correct to practical limits two years of time and thousands of dollars would have been saved. That they were not correct was everybody's fault. We took these models as they stood, assuming that if they were not correct, and the tools were made exactly to duplicate them, the machine would be satisfactory, even if they were not mechanically perfect. Soon, however, it was found that gauges and tools that fitted models, and that produced results which seemed like models, still gave unsatisfactory results in the finished machines. In one case where the shuttle should oscillate a certain number of degrees we got a fatal difference. In another case where the model feed was level at the highest point the stock machines gave a result too low at one end. Again, it was found that the center of the needle bar in a model was greatly out of perpendicular to the center through the arm

shaft. There were a multitude of other defects that affected results, but here are enough to prove the ruinous effects of an incorrect model. The cause of the shuttle oscillations being different in practice from the model came from the fact that the crank shaft was accepted as being 0.5 inch radius, which it was not by considerable. The alignment of holes in the bed affected this, as also did a crooked hole in one of the small parts. Two badly tapped holes in the model gave the feed defect, while the fact that the needle bar was not

Universal Drill Jig.

To make these models I devised a novel boring machine, Fig. 1, which since has been developed to a wonderful capacity. To a work table which can be turned to any angle there was fitted a drilling head, mounted on cross and vertical slides with micrometer adjustments. In line with this spindle there was a bushing suspended from above. This bushing fitted the drill and guide it to work. This suspended bushing also had a backward and forward

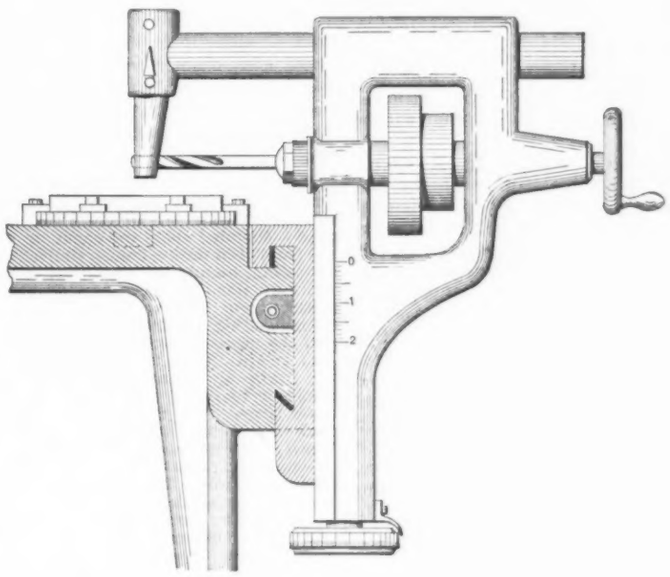


Fig. 1.—Universal Drill Jig.

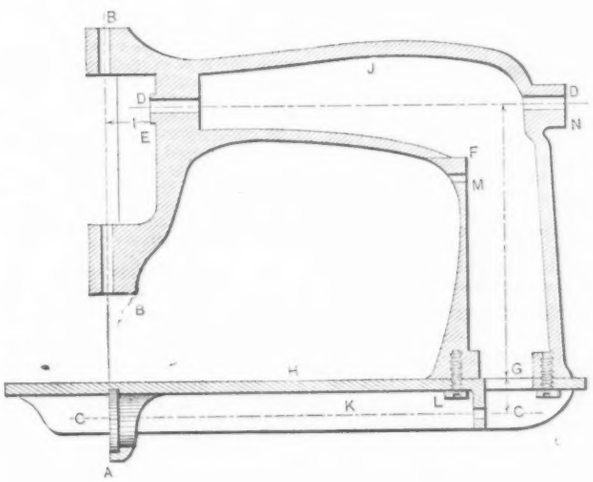


Fig. 2.—Sewing Machine Arm and Fed, Showing Gauge Points.

MODELS, INSPECTION AND GAUGES.

vertical to the arm shaft caused much trouble in fitting, and resulted in a machine wearing quickly. Neither of the models was bad, as models go, but there were a great many little things that were not right, and they were just where they caused trouble. Now, when it was decided that the models were wrong, it took heroic fortitude to demand that they be corrected, entailing alterations in tens of thousands of dollars' worth of tools, months of time, and many new gauges. Then, "What is right?" was a question that could not be answered. But slowly, one thing at a time, the whole ground was gone over. Impatient dissatisfaction above demanded haste, while the departments rebelled at incessant change. adjustment, as well as the faculty of being taken out when necessary. This tool we called a "universal drill jig," and by it we were able to make the hole in our models to within 0.0005 inch limits of variation from theoretical distances.

Inspection.

All work is subject to an inspection of some kind by some one somewhere; therefore inspection is not a matter that fine work alone is the subject of, but that fine work is the subject of a close and strict inspection which rejects defects of every hurtful character. Proper inspection is an honest desire to take for use every piece that will go to make an acceptable product, and a tireless industry to search through the whole for fatal defects. An acceptable inspector is one who knows what is right, what is wrong, and has judgment to accept the greatest admixture of wrong with right that may be allowable. Some idea of correct principle in inspection may be got from the sketch, Fig. 2, of a sewing-machine arm and bed, in section, showing the common gauge points and the reasons for them. The line A B is, of course, the chief adjustment point in assembling a sewing machine, because it is the relation of the needle to the shuttle and affects the sewing function to a greater degree than any other gauge point. This is shown here to emphasize clearly that care must be had in inspecting both the arm and the table, so that when these parts are adjusted the one to the other, the points of dependent relation will occupy their proper locations the one to the other. The three dimensions in inspecting the arm J are, 1, the hight of the shaft hole D D from the base G; 2, the length from the holes B B to the dowel pin L; 3, the thickness from the plane through the centers of the holes B B and the holes D D sidewise in the casting for symmetry and the necessary clearances. The three dimensions in the bed K are, 1, the hight from the shuttle shaft holes C C to the face H; 2, the length from the shuttle position A to the dowel pin hole L; 3, the width from the holes C C to the general outline and clearances in the casting. Now, inasmuch as every motion in the machine is derived from the shaft in the holes D D, its location is the most important point in it. This is but another way of saying that all the other parts of the machine should correctly be located in relation to D D, its chief gauge points. Then, because the shuttle is driven by a shaft in C C, which shaft is connected to the shaft in D D by a link of arbitrary length, it is necessary that the hights C G, G D shall be correct. This indicates that the most particular of the three dimensions in the arm, as well as in the table, is the dimension of hight. Now, it is evident, should the arm J be placed on the table K, and the pin L be pushed into the holes it occupies in the sketch, that if it fits these two holes, the end and one part of the side position of the arm on the table will be determined. This at the first indicates that the dimensions B L and A L are of more value than the one C G D, but when it is shown that slight variations may be corrected here by using a temporary pin in assembling and reaming for a permanent pin when the arm is set, while in the other case no correction is proper, the cause of rating the hight as of the greater importance will be evident. Slight variations, when they are found to exist in the hight between C and D, are overcome by "selection"—*i. e.*, when the large limits in hight of the arm and the table come together and make too great a distance between C C and D D, the arm should be unbolted and reassembled to a thinner table, and *vice versa*. Now, it is evident that all positions of hight or of width in the arm must be gauged from the holes D D, and inasmuch as the centers of D D are on the same plane as the centers of B B, which determine lengths, these holes B B and D D are sufficient to accurately locate by proper gauges every other point on the arm. In fact, if B B is not in the plane with D D or vertical to it in the other elevation it can be detected by reference to D D and not by any other possible means. The plane of the base G is a right angle in both directions to the holes B B, which suggests at once how a gauge for it should be made. Again, the hole L is on the central plane and must locate in length from B B, which gives the elements of its gauge. Furthermore, the hole M is also on the central plane, taking its hight from D D, and its gauge is simple. The position of

the face E should be swept by a gauge on a bar in B B, and the length E N be measured by a bar caliper or snap gauge. The face F being important and of more consequence than N should be swept by a straightedge on a shaft in D D and be located lengthwise directly from the holes B B.

The Test of the Vesuvius.

The Board of Experts, composed of Commander Evans, Lieut.-Commander A. R. Cordon and Lieut. T. E. Meigs, appointed to test the guns of the dynamite cruiser Vesuvius, have made their report. The first trial, May 18 last, was devoted to finding the proper range Six shots were fired from the starboard gun and five from the middle gun. The port gun was not tested. Notwithstanding that the guns are constructed alike, the results, with the valve indicating the same pressure, were entirely different and greatly puzzled the testing officers. Had it not been for the ingenuity of the officers, the Vesuvius and her pneumatic guns would have been condemned there and then. By way of improvement the valve controlling the influx of air from the reservoir was replaced by a self-regulating throttle. This being done the preliminary target practice test took place. The distances were known and these results obtained:

Shot.	Distance of target.	Deviation from line of fire.	Range.
1.....	1 mile.	0	52 yards over.
2.....	¾ mile.	16 yards left.	48 yards over.
3	½ mile.	Bull's eye.	.....
4.....	1 mile.	52 yards left.	32 yards over.
5.....	¾ mile.	0	24 yards over.
6.....	½ mile.	15 yards left.	28 yds. short.
7.....	1 mile.	24 yards lett.	4½ yds. short.
8.....	¾ mile.	16 yards left	35 yds short.
9.	½ mile.	10 yards left.	28 yds. short.

The target and the Vesuvius were stationary when shots 1, 2, 3, 7, 8 and 9 were fired. When shots 4, 5 and 6 were fired the Vesuvius steamed at a speed of 12½ knots toward the target.

The formal trial took place on May 20, and six shots were fired from the starboard gun. These were the results·

Shot.	Distance of target.	Deviation from line of fire.	Range.
1.....	1 mile.	0	56 yards over.
2.....	¾ mile.	16 yards right.	104 yds. over.
3.	½ mile.	24 yards right.	24 yds. short.
4.....	1 mile.	20 yards left.	16 yds short.
5	¾ mile.	0	300 yds. over.
6.....	½ mile.	8 yards left.	275 yds. short.

The first three shots were fired at a stationary target and the Vesuvius steaming at a speed of 12½ knots toward the target. Shots 4, 5, 6 were fired at a cutter towed by the Cushing at 10 knots, while the Vesuvius was steaming at a speed of 17½ knots toward the cutter.

None of these shots in actual warfare would have done any harm to the attacked vessel, while the Vesuvius would have been sunk by the enemy or blown into atoms by the explosives she carried aboard. All the shells were dummies. The guns have been further improved, and perhaps the coming tests will give better results. From the records of the first trials it seems as if a mile or a little more will be the best range for the guns on board ship, while being absolutely unreliable at shorter distances. The mile range is too short for effective fighting, as the Vesuvius is a comparatively large vessel, measuring 246 feet in length, with 26½ beam and a displacement of 725 tons, and offers a splendid target for the guns of an ironclad or cruiser. Her speed is 21.65 knots.

One of the greatest defects of the Vesuvius is her lack of maneuvering power. She is too long, and her guns being fixed she ought to have some means of moving her bow. She can fight only bows on, and is insufficiently fitted even to do this effectively. The guns in the Vesuvius are 5 5½ feet long and built into the ship at an angle of 18°. As the gun is at a fixed elevation the range of the projectile must be controlled entirely by compressed air. Powerful pumps are used to compress the air in the storage reservoirs up to a pressure of 2000 pounds per square inch. The capacity of the reservoirs is sufficient to supply air for at least 20 shots in quick succession. Before each shot a valve is opened, admitting air from the storage reservoirs into the firing reservoir until the pressure rises to 750 pounds per square inch, when the valve is closed. The firing valves control the admission of the air from the firing reservoir to the breech of the gun in the rear of the projectile. It is evident that if the valve is left open so that air from the firing reservoir will continue to flow into the gun barrel as long as the projectile remains in the gun the greatest range will be attained.

The operation of loading is simple enough. The lower section of the gun barrel is first lowered into a horizontal position. Five shells for each gun are carried in a five-barreled reservoir, which revolves like the cartridge holder in an ordinary pocket revolver. The shell is pushed from the reservoir into the breech section of the gun by a hydraulic rammer. After this the breech section of the gun is raised and joined to the rest of the gun barrel and the five-barreled reservoir is turned on a central shaft to bring another shell into position for loading. A signal is made to the captain in the pilot tower, and the actual firing is done there by means of pushing a lever.

Trade Publications.

HOISTING AND CARRYING APPLIANCES of several kinds are described in a catalogue just published by John Q. Maynard of 114 Liberty street, New York. The illustrations show the construction and arrangement of hoists, traveling cranes and overhead railways.

THE LOOMIS SYSTEM of incandescent and arc electric lighting is fully described and illustrated in a pamphlet issued by the Eureka Electric Company of 18 Broadway, New York. The dynamo is entirely automatic, diminishing the quantity of current as lamps are extinguished and increasing it as they are relighted. The power required to run the dynamo is in direct proportion to the number of lamps in actual use. The lamps, both arc and incandescent, are of new and recent design, and are stated to possess marked advantages.

THE BECK PATENT DUPLEX FEED ENGINE, with patent duplex cable system, is described in a catalogue by the makers, Pawling & Harnischfeger of Milwaukee, Wis This machine is nothing more nor less than a pair of self-contained, double-acting steam engines, with self-packing pistons, steel piston rods, self-oiling crossheads and steel connecting rods with adjustable boxes. The main valves are balanced and are so made that the steam is entirely within the valve. The guiding heads at each end are self-packing and present a wearing surface of over 80 square inches. These heads, filled with small oil grooves, for lubrication, carry the valve proper between them and absolutely within the center of the valve chamber. By this novel construction the valve is kept from wearing either itself or its seat, and is, therefore, always tight. All water around the valve is drained automatically into the exhaust chamber and passes out through the exhaust pipe. The reverse valve stuffing box is under exhaust pressure only, and can be packed very lightly. The catalogue fully describes the duplex cable system and shows the best method of arranging the engine and sheaves in a saw mill.

CAST-STEEL CYLINDER SAWS, barrel, key and pail machinery, and box board machines are made by Strange's Machine Works of Taunton, Mass. The cylinder saws are made of the best cast steel, are smooth inside, without any projection and are very carefully balanced.

THE MINER & PECK MFG. CO. of New Haven, Conn., issue an illustrated catalogue describing their drop presses, blast forges and drop forgings. The crank motion as applied to the Peck drop lifter exerts the least strain on the frame and mechanism of the lifter, as the hammer, as it starts upward, moves with a slow but increasing velocity until it reaches the quarter turn, when it decreases in velocity, and when nearing the upper part of the stroke it moves slowest when ready to be caught by the lock bars. With this lifter the hammer is allowed to fall entirely free and is not caught up until it has struck the blow, the lifter taking it up just as it has finished the blow and bounds up, thus not lessening the force of the blow, and at the same time not allowing the hammer to rebound and give a false blow, injuring the work.

THE JEFFREY MFG. COMPANY of Columbus, Ohio, describe their mining machines, drills, motor cars, chain elevating and conveying machinery, in a catalogue just published. The electric coal mining machine consists of a bed frame occupying a space 2 feet wide by 8 feet 6 inches long, composed of two steel channel bars firmly braced, the top plates on each forming racks with their teeth downward, into which the feed wheels of the sliding frame engage. Mounted upon and engaging with this bed frame is a sliding frame, similarly braced, consisting mainly of two steel bars, upon which are mounted at the rear ends the electric motor, from which power is transmitted through straight gear and worm wheel to the rack, by means of which the sliding frame is fed forward. Upon the front end of this sliding frame is mounted the cutter bar, held firmly by two solid steel shoes, with suitable brass boxes. The cutter bar contains bits, made of tool steel, held in place by set screws. When the cutter bar is revolved these cutters or bits cover its entire face. The cutter bar is revolved by an endless curved link steel chain from the driving shaft, and as it is revolved, is advanced by the above mechanism into the coal or other material to be undercut to the desired depth. The electric motor occupies a space of about 20 inches square, is built in the most workmanlike manner, both mechanically and electrically. The current required is from 30 to 50 ampères at a pressure of 220 volts ; the motor is wound to develop fully 15 horse-power, though frequently in some veins of coal the machine only uses 30 ampères, or 7½ horse-power in making cuts. The machine is started by means of a switch located on a suitable resistance box, on the rear end of the motor, the same being arranged with buttons ; the current is gradually turned on by simply passing the lever over these buttons. The armature of the motor is calculated to run at a speed of 1000 revolutions per minute, from which the speed is reduced so as to run the cutter bar 200 revolutions per minute. The momentum of the armature is such that ordinary obstructions met by the cutter bar in the coal are not perceptible, causing the machine to run steadily and comparatively quiet.

THE LAST CATALOGUE by the Thomson-Houston Electric Company of Boston is devoted to electric tramways for mills and manufactories. This system is intended to provide a convenient method of transporting raw materials, manufactured products, coal and other commodities from one part of a works to another or to and from the steam railway station The system is safe, reliable and economical and has given entire satisfaction wherever introduced. Among others, the catalogue describes the electric tramway for the transportation of coal and iron about the yards and factories of the Trenton Iron Works. The track is about 1 mile in length and almost entirely made up of curves, some of which have a radius of only 11 feet. In spite of the difficult curves the road is in successful operation, no trouble being experienced in hauling loads of 6000 to 7000 pounds at a rate of 4½ miles per hour by the 3 horse-power locomotives with which the road is equipped. Two locomotives are in constant use The trolley wire is 18 feet above the ground in the street ; but this hight is reduced in places within the buildings to 6 feet, giving a variation of 12 feet. A 220-volt Thomson-Houston generator supplies the current.

THE DICKSON CAR WHEEL COMPANY of Houston, Texas, describe in a small pamphlet their chilled car wheels made from Texas iron. The ore is a brown hematite, producing iron of unusual strength and high chilling tendency. Tests were made of six specimens of this cast iron by the Philadelphia Scale and Testing Machine Works. The pieces were 2 inches square, were supported on centers 12 inches apart, and broke at from 27,000 to 32,000 pounds. The above company have the right for Texas for the exclusive use of the Barr contracting chill.

The Jones Car Wheel Rolling Mill.

John R. Jones, roll designer of the Pencoyd Iron Works, Philadelphia, has designed a machine for the production of a metallic car wheel, the texture of whose web and rim shall have a uniform section, and be dense, but fibrous. It is a well-balanced wheel, of which those parts subjected to the greatest wear, tear and strain have been strengthened, to give the wheel a longer life and lessen the cost of repair.

These attributes, combined with a low cost of manufacture, which the above machine facilitates, would seem to give it a desirable place in the long list of rolling-stock appurtenances that are to-day placed upon the market. In reflecting upon the different influences, both climatic and mechanical, that an ordinary car wheel is called upon to undergo these considerations are of moment. The advantage to a railroad man of having a wrought wheel with a fine granulous tread and web of strong tensional properties, which enable it to resist the action of frost and heat and rapid pounding over frogs and switches, can easily be proved. Such a wheel is what the John R. Jones machine claims to produce. The simplicity of its method of treatment of the most adaptable known metal gives at once the minimum of weight and cost, with the maximum of utility.

The process requires, in the first place, a steel ingot of a form somewhat symmetrical with that of the finished wheel, but of certain larger and properly estimated proportions, with the exception of its diameter, which is smaller. The ingot at the proper heat is then placed between and subjected to the pressure of revolving rolls, which flows and works the metal as in the case of ordinary steel-bloom rolling. The pressure of the top roll, which bears upon the periphery, is counteracted by two side rolls running obliquely to and upon either side of the ingot, and which bear at the same time upon the web and under side of the tread of the wheel. As pressure is brought to bear on the different rolls, the metal in the web of the ingot flows outward from the hub toward the rim, while the metal in the rim under pressure of the tread roll is elongated and increased in diameter, but reduced in thickness. A correct knowledge of the action of hot metal under the influence of rolls will give the designer the proportionate sizes of the ingot. An acquired skill will enable the operator to govern rightly the rolls, both as to the movements of applying, holding and releasing the pressure and in the pressure required.

After the ingot has been increased to the desired size, all the steadying rolls are brought to bear upon the periphery of the wheel, while the pressure of the rolls is decreased until barely sufficient to turn the wheel. This is done to give rotundity to the wheel, at the same time condensing and hardening the tread. There is at this stage very little displacement of metal, which by this time is at a rather low temperature. A jet of water playing on the wheel gives it a smooth and glossy appearance. It is now a wrought steel wheel equivalent to a steel tire, without the misuse or loss of a pound of metal, produced quickly and cheaply, comparing favorably with some of the most expensive car wheels, possessing the advantage over the cast chilled wheel in having the tread of a fine granulous instead of a crystalline nature; over the paper and wooden wheels in stability and cheapness of structure, and over the iron center tire wheel in cheapness of manufacture. Its weight is about one-half the latter. It reduces the weight of a car from 2000 to 6000 pounds.

To accomplish this a cast steel car wheel, blank or bloom having the hub near the desired proportions, and the web and rim thicker than is desired in the finished wheel, is placed between three rolls—a movable driven tread roll and two side rolls—one of which operates in sliding bearings but is not driven, the other is driven rotating in fixed bearings. The movable tread roll in its sliding bearings is made to approach the side rolls during the continuance of the operation. The tread roll is designed to give shape to the tread and flange of the wheel, and is movable by means of hydraulic pressure to compress, harden and extend the wheel to any desired diameter while being supported and revolved by the side rolls. The side rolls operate on, compress and harden the web of the wheel, assist in revolving the bloom, holding it in position to be acted upon by the tread roll. One of these side rolls runs in fixed bearings, the other, which is sliding on bearings, moved by means of hydraulic pressure, rolls the web of the wheel, elongates it, hardens and compresses the metal, moving inward toward the fixed side roll. These side rolls are of greater diameter than one half the diameter of the wheel. During the operation the metal flows outward from the center toward the rim; at the same time the tread of the wheel is elongated

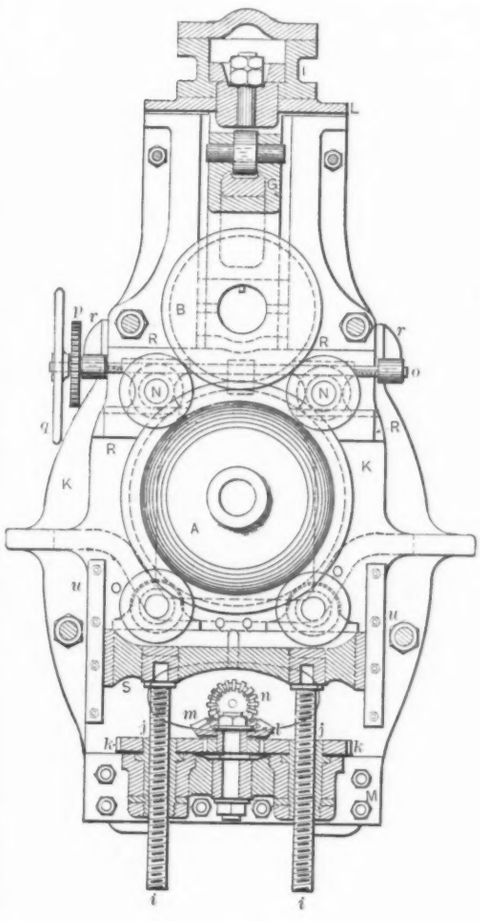


Fig. 1.—Front View.

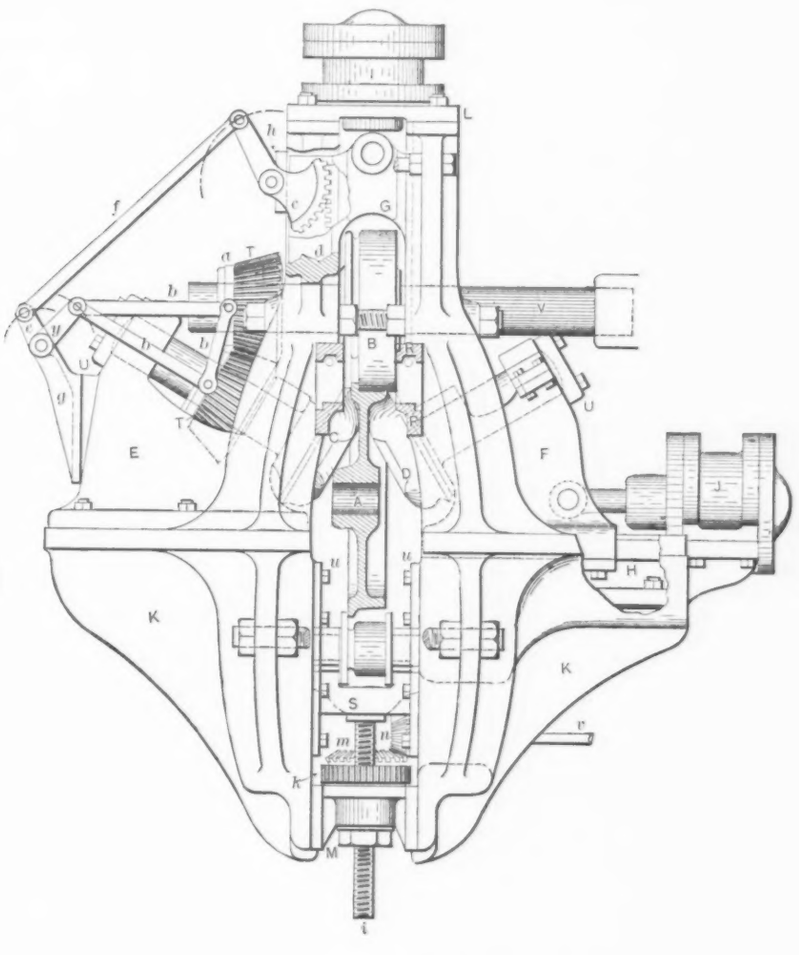


Fig. 4.—Side View.

THE JONES CAR WHEEL ROLLING MILL.

and increased in diameter by pressure being given to the tread roll. The metal of the hub is rolled and hardened by means of the co-operation of the side roll with the steadying rolls. This is done by holding the side rolls on fixed bearings while rotating them, and bringing pressure to bear upon them through the bloom from the steadying rolls *o o*. This pressure can be secured from the main shaft V through the pulleys on the shaft *v* and its pinions and sliding cross heads to the rolls *o o*.

Fig. 1 is a front view of the entire machine with its bearings and connections, showing the finished wheel in position between the rolls at the completion of operations; the roll *o* being withdrawn to show it in full lines, its normal position, however, being against the lower edge of the wheel. Fig. 2 is a sectional view of the rolls B, C and D, showing the wheel in place at the beginning of the operation. Fig. 3 shows the position of the steadying rolls N and O and the wheel during the operation. Fig. 4 is a side view of the machine at half section, showing the wheel A in full. A is a finished wheel in position between the rolls. The tread roll B is coupled to the main shaft V. The coupling is so constructed as to permit the roll B to move up and down on its slides in the housings G. A movable housing, or yoke, carries the tread roll B in its boxes. I is a hydraulic cylinder which presses the tread roll B against the tread of the ingot A. C and D are side rolls, so designed that as the wheel nears its required size the rolls B, C and D nearly develop the metal of the tread. C is a driven roll revolving on fixed bearings, and D is a friction roll rotating on sliding bearings, movable under pressure.

The housing E which supports the roll C is fixed and is bolted to the main housing K. The housing F which supports the roll D is worked inward and outward upon the slide H; by the pressure of the cylinder J it can be made to advance or can be held in any position while the wheel is being finished, or can be made to recede to allow the wheel to be removed. The side roll D has no positive motion. The only motion it receives is that which comes through the ingot from pressure against the side roll C. The side roll C has a positive motion through the bevel gear wheels T and T from the main shaft *v*. These bevel gear wheels T T are kept in gear and at the same pitch line by means of the bell crank *c*, with its levers *e y*, and the links *f* and *b b*, which is controlled and operated by the rack *d*, which is bolted on the sliding yoke G. The bevel gear wheels T T slide on the shafts of the rolls B and C over a key fastened to the shafts. The sliding motion is secured through the bell crank *c*, its links and levers by the movement of the rack *d* on yoke G. The bell crank *c* is supported by the housing K and is connected with the rack *d* by means of cog gearing, and any motion of the rack is communicated through the link *f* to the levers *e* and *y*, which are supported in bearings on the housing E, and from them through the links *b b* to the wheels T T; either pushing them forward on their shafts or withdrawing them, thus keeping them in gear and on the same pitch line.

Fig. 4 shows the machine at half section, exposing partly to view the steadying rolls N N O O. The top rolls N N, Fig. 1, always bear on the wheel to stop its lateral motion and to prevent the formation of fins while the wheel is being rolled. As the wheel increases in diameter, the rolls are moved slightly apart to suit, by means of the screws *o o*, Fig. 1, which are turned by the hand wheel *q*, and gearing to each other with wheels *p p*, one only being shown in the drawings. The screws *o o* are each cut with a right and left-hand thread, and are held in position by the bearings *r r*. The boxes which bear the steadying roll N N are threaded to suit the screws *o o*, and move along the slides R R. As the wheel nears completion the lower steadying rolls O O are brought into play. They, in their bearings, Q, Fig, 1, are fastened to the cross-head slide S, which moves up and down on the inside of the main housing, and are held in position by the bolted shoes *u u*. As these rolls N N O O, which are grooved and shaped to inclose the thread and flang of the wheel, are brought against it, the pressure of the side rolls is continued, while the tread roll B, pressing slightly on the ingot, rolls it around on the steadying rolls O O, finishing off and rounding up the wheel to its proper size. If, from any cause, the wheel has been rolled slightly above size, pressure on both the tread roll and the steadying rolls O O would reduce it to some extent. The movement of the lower cross head S is controlled by the operator through the main shaft V, which is belted by means of an open and cross belt to the pulleys on the shaft *v* to give reverse motion. A friction pulley, or in fact any means, can be employed to give forward and reverse motion to the shaft *v*. This shaft *v* is set in the machine pit, supported by bearings,

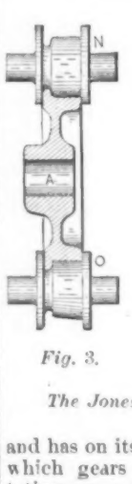


Fig. 3.

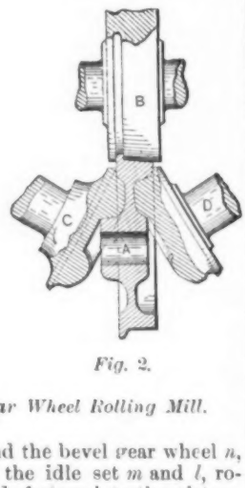


Fig. 2.

The Jones Car Wheel Rolling Mill.

and has on its end the bevel gear wheel *n*, which gears to the idle set *m* and *l*, rotating on a stud fastened to the girt *m*, the pinion *l* on the set transmitting the power and motion to the open gears *k k*, which are keyed to the bronze nuts *j j*. The revolving nuts *j j* raise and lower the screws *i i*, keyed and pinned to the hubs of the cross head S. This moves the cross head S and lowers the steadying rolls O O to the desired position. When the wheel is rolled to the proper size and the metal is set enough so that it can be handled, the cylinders I and J are reversed, the yoke G and roll B are raised from the tread, the housing and roll D are moved back, the cross head S and rolls O O are lowered and the wheel *a* can be removed. The whole operation requires about three minutes.

The Iroquois Furnace.

The new coke blast furnace of the Iroquois Furnace Company, at South Chicago, Ill., was blown in on the 19th inst. The owners had hoped to have the works completed and in operation last June, but the builders of the machinery disappointed them, delaying the blowing in of the furnace until now. The plant is regarded by the trade as a very fine one, embodying the most recent improvements, and it is confidently expected to make a good record. It occupies a fine location on the Calumet River, not far from its entrance into Lake Michigan. Ore vessels drawing 16 feet of water can unload at the company's docks, which are conveniently near the furnace stack. The company own some 20 acres of land, and will for the present use their cinder for filling. The Baltimore and Ohio Railroad runs directly past the furnace, but connections are also made through the Belt Railroad with the entire Chicago railroad system. Facilities for receiving raw material and shipping pig iron are thus of the best character. The plant at present has one furnace stack, but everything has been arranged for two stacks, and the second will be added after the first has proved entirely successful.

The buildings and equipment are of the most substantial character. The furnace stack is 17 x 80 feet, steel shell, built by the Carroll Porter Boiler Company of Pittsburgh. It has seven tuyeres. The gas mains are all overhead. There are three Cowper-Kennedy fire-brick stoves, each 18 x 75 feet, and the draft stack is of iron, 192 feet high by 12 feet in diameter, brick lined, all of which were furnished by the Sharon Boiler Works of Sharon, Pa. They also built the boiler shed. The stock is elevated to the top of the stack by a double vertical hoist, operated by a 10 x 12 hoisting engine built by the Crane Elevator Company of Chicago. The furnace has a bell and hopper top with steam lift. The cast house is a brick structure with an iron roof, and is 64 x 175 feet. It is supplied with narrow-gauge tracks, running along each side, for the passage of pig-iron trucks. The boiler house is between the casting house and the engine house and contains 14 boilers, built in pairs, each 54 inches by 30 feet with two 18-inch flues, furnished by the Enterprise Boiler Company of Youngstown, Ohio. The engine house is built of brick, 68 feet long by 38 feet wide and 37 feet high to the square, and contains two blowing engines and the pumping outfit. The blowing engines are twins of the vertical type, fitted with the Nordberg-Corliss valve movement, and were built by the Wilkins Mfg. Company of Milwaukee. The blowing tubs are 84 inches in diameter and 60-inch stroke, while the steam cylinders are 40 inches in diameter and 60-inch stroke. There are four pumps, built by the Wilson-Snyder Mfg. Company of Pittsburgh. Two are duplex pumps, each 20 x 13 x 24 inches, rated, combined, at 1,000,000 gallons per day, and used for filling the tank, while the others are boiler feeders, 6 x 10 x 15 inches. The stock shed is an iron building, 85 x 200 feet, with two tracks elevated 16 feet. The ore docks are 32 feet high and are equipped with 10 Champion ore conveyers, designed by Robert Aspen of South Chicago, and operated by a double engine, 14 x 18 inches, built by Webster, Camp & Lane of Akron, Ohio. These docks have a storage capacity of about 70,000 tons. An electric light plant to furnish 16 arc lights is being installed. The cast iron work used in this plant was furnished by Louis Wertheimer of the Crescent Foundry, Allegheny City, Pa., and the woodwork and masonry were built by Rudolph Erhart of Defiance, Ohio. Fairbanks' stock and track scales are used.

The officers of the company are as follows: President, Hay Walker, Jr., Pittsburgh; treasurer, T. H. Given, Pittsburgh; secretary and general manager, C. F. Forster, Chicago; superintendent, F. M. Kernan, South Chicago; bookkeeper, Harry Burrell, Chicago; clerk at furnace, Frank M. Hixson; chemist, Carl Fischer. The main office of the company is at Chicago, room 638, in the Rookery building. The blast furnace is under the direct charge of men of long experience in the manufacture of pig iron for the general market. Foundry pig iron will be made exclusively. The strong foundry iron will be branded "Iroquois," and a special brand of soft iron will be manufactured under the name of "Sterling Scotch." The product of the furnace will be carefully analyzed in order to furnish foundrymen with the precise quality of iron needed for special results.

Treatment of Low Grade Iron Ores.

Erastus Wiman, albeit a man without training in economic science, is a sufficiently acute observer of economic conditions in this country that what he has to say is generally worth hearing. As an instance of this, his contribution to the *North American Review*, entitled "The Farmer on Top," has excited a great deal of interest in the West, especially as the recent events in relation to wheat and corn have more than justified the position in which he predicted the farmer would soon financially occupy.

Conversing recently with Mr. Wiman, he was found to possess some ideas regarding concentration of iron ores, which, though somewhat crude, it may not be amiss to report. His talk was substantially as follows:

"Of all things now the most important is the revolution that impends in iron ores, by virtue of separation and concentration. Compared even with the output of grain, at its present high price, the possibilities of iron production from hitherto useless mines is likely to be only second in importance of profit. Even the cotton production, which in a single year exceeds in value that of the total output for five years of all the gold mines in the whole world, will yield a profit less than may be yielded from iron mines hitherto profitless. The limit of cotton production now far exceeds the consumption, and the price is too low to encourage its growth. But the use of iron grows with a rapidity that nothing else equals. The disappearance of wood is constant. The statement is one of the most startling on record that there is less standing timber, *per capita*, in America to-day than there is in Germany, showing the vast destruction that has taken place in this wooden country. As the country grows and the population increases, civilization makes new demands, and the disappearance of wood becomes more and more rapid, with nothing to replace it but iron. Hence the increase in the demand for this material is imperative.

"While forests disappear, not in a century to be replaced, while whole areas of the continent are denuded of the majestic growth that it has taken centuries to perfect, mankind would be in despair for the material with which civilization most rapidly advances did not the earth disclose the best of all substitutes, the strongest, the most durable, the most available of all materials, the willing servant of man's inventive skill—the imperial metal of iron. But while iron remains next to wood almost the sole reliance for the advance of civilization, and the demands upon it assume colossal proportions, it is a fact that up to this period there have been vast deposits of the finest and highest quality of iron unavailable for the want of a mode to lift it out of the environment in which by nature it is embedded.

"But now a new day dawns in this iron world of ours by the use of magnetism, so that by a simple and effective process the fine qualities of the iron are lifted up and out of the surroundings in which for long ages they have been imbedded, separated from the refuse that inclosed it and concentrated into a condition so attractive to the manufacturer that above all other forms which iron reaches this finished product seems the most desirable. When so great an iron master as John Fritz of Bethlehem has progressed so far in the use of these concentrates that he habitually employs 50 per cent. in a number of his furnaces and sees no reason why 75 per cent. could not be used, it is a fact of great significance. If such an expert manipulator of metal is eager to get all he can lay his hands upon of the requisite high quality which these magnetic concentrates alone can reach, it shows the possible extent of the demand. Mr. Fritz is but a representative of a great class of consumers that are looking for the higher grades and purer qualities of metal, and although little or no money has yet been made in the production of these concentrates, the foundation is evidently being laid for an enormous consumption and hence an enormous output."

"But if no money has been made," asked the reporter, "what is the likelihood of a business being promoted to proportions such as you imply?"

"The fact that concentrates can be so readily sold," replied Mr. Wiman, "and the further fact that iron exists within sight in such vast quantities that it is only a question of getting it out of its environment, is a sufficient motive to induce a constant effort to accomplish this. Now that the first stages in this direction are achieved, the work is sure to go steadily ahead. Mr. Edison's ability, at Ogden, N. J., to produce 200 tons of concentrates per day is undoubted, and if it has cost more than he received to produce it, the expectation is a reasonable one, that by improvements and changes the balance may some day be on the other side. He is just now devoting his sole attention to this problem of cost and revenue, of wear and tear, and other rather troublesome aspects of the case, but as he has solved many a more difficult problem in times past, he may be relied upon to discover a way out of an unprofitable plant, if a way is discoverable. So with Mr. Conkling, at Chateaugay; with Mr. Cheaver, at Croton; with the Tilly-Foster venture; with the Benson ores, testing the extremely attractive Ball & Norton machine; and still more is the hopeful enterprise of Messrs. Witherbees, Sherman & Co., under the direction of that very able observer and expert, John Birkinbine. It is true that dividends have not yet materialized, notwithstanding large expenditures, and also a considerable output of finished product. But enough has been demonstrated to encourage the various inventors and their friends, who are patiently awaiting the fulfillment of promises. It would seem only a question of time for the survival of the fittest, and the perfection of the survival to a degree that will make possible a vast output and a vast proportion of profit.

The Weldon Plant.

"Indeed the first beginnings in this direction" continued Mr. Wiman "are already accomplished, at the Weldon Mines, in New Jersey, where, if nowhere else, in the already wide field of concentration, a profit, and a good round profit, is being made by concentration. At this point Messrs. Richard Heckscher & Sons, the well-known iron manufacturers of Philadelphia, have erected the newest and youngest claimant to consideration in the concentration world—namely, the Rotary Magnetic Separator. This device is controlled by a company, of which I have the distinguished honor of being president, for it is an honor to be associated with a concentrating enterprise that from the very start shows a profit larger, in proportion to the money put into it, than any other investments in the whole range of industrial investments in this country. I know this is large talk, and it is especially large talk in circles of concentration, where, thus far, there has been little else than talk, and that of rather a large kind. But the fact that the Weldon plant is not only extremely profitable, but that it is the only concentrating enterprise that, from the very first inception has yielded a larger return than has been ordinarily reaped by any experimental enterprise, justifies some pride in the project.

"The facts are these," continued Mr. Wiman. "The Rotary Magnetic Separator was erected at Weldon, N. J., during last winter, at a cost not to exceed $15,000. This charge included the cost of the building, boilers, engines, shafting, dynamos, and the separator itself, which latter was the least costly element in the whole plant. It was set to work some time in February, and except when the mine itself was, for a brief period, not being worked, has run daily ever since, with results the most gratifying. With a capacity equal to 40 tons per day of concentrates, taken from iron hitherto thrown upon the dump, salable at, say, $5 per ton, equaling $200 per day; the cost of the running of the plant does not exceed $25 per day. It is not to be inferred that Messrs. Heckscher & Sons have made $175 a day clear profit since the plant commenced to run, but it is not the fault of the rotary separator if they have not. The capacity to concentrate 40 tons in 20 hours of low grade ore is in the machine, while the daily expenditure need never exceed $25. Inasmuch as the ore concentrated is that which heretofore reached only the dump, and that the concentrates are practically rescued from that which was hitherto valueless, a larger return has not only been rendered possible, but has actually been realized from this investment than from any other investment in the whole range of industrial activity. Assume, for the sake of argument, that the profits are $75 per day, which was probably much below the mark, the investment of $15,000 would not only have returned itself within the year, but would have also yielded 100 per cent. profit. If there is any other concentrating enterprise that shows an equal record, if there is any other legitimate industrial undertaking that can do better than this, the Rotary Magnetic Separator and its president will take a back seat. But until these profits can be surpassed, until better separation and concentration, and more genuine satisfaction to the manufacturer are achieved, the rotary separator it is clear takes the lead, as the only genuine commercial success thus far achieved in this most important line of development, in which the whole iron world is more or less interested.

"Now, if for almost an entire year, day in and day out, this has been the result on a little $15,000 plant, with a capacity of only 40 tons per day, what would be the profit of a $200,000 plant, and yielding an output of, say, 500 tons per day? There are millions of tons of magnetites, even in New Jersey alone, of 30 per cent. iron and below that are now silent, and dormant and dead. If by the expenditure of an amount that can be returned the first year in considerable proportion, these deposits can be lifted out of their envoirnment, concentrated to the highest form of usefulness, and marketed at the best realizable prices for iron, what in the whole range of development in this marvelous country approaches in importance this possible growth in wealth?

"In this rehearsal of achievements of the Rotary Magnetic Separator, it is true no mention is made of the cost of mining, because in this instance, as in many other possible cases, no extra expense is involved. The low-grade material which reached the separator through the crushed had to be mined in order to get the rich ore, and the cost of getting it out was naturally and hitherto chargeable to the shipping product. It would have reached the dump at no less cost than it reached the separator. Of course, if all the product of a mine went through a concentrating plant, the charge of mining would necessarily be added, but it is submitted that concentration does not increase the cost of mining, while it opens a new and most important potentiality of profit."

The Finney Machine.

The Finney Magnetic Separator, which is that used at the Weldon Works, and which Erastus Wiman refers to in the

above article, is a wet separator. During a visit to the Weldon mines a representative of *The Iron Age* witnessed its operation. We may state that, generally speaking, the conditions are very favorable to good financial results at the mines in question. The mineralization is such that clean concentrates and fairly good tailings may be obtained by crushing and screening only to 10 mesh. In other words, the cost of crushing and sizing is low and the capacity of the plant is relatively low. We do not believe that direct inferences can be drawn as to the results obtainable under other conditions less advantageous. We have been unable to obtain exact and comprehensive data on the efficiency of the machine.

Its construction is shown in the accompanying engravings. It consists of a magnetic wheel, A, in the form of a spool, whose heads are provided with offsets, *o*, Fig. 2. The shaft *e*, hollow at one end as shown, enables the terminals of the insulated wire *m*, with which the spool is covered up to the offsets *o*, to be led to the transmitter B. The terminals are connected with the two metal bands shown in section in Fig. 2. The heads of the spool are extended by metal bars, *f*, Fig. 1, from opposite ends of the spool, over the copper wire in staggered order, each bar reaching nearly up to the rim of the opposite head, but insulated from it by brass strips. The spaces between the bars, shown black in the engraving, are filled with a strong non conducting material. C is an endless belt of rubber or canvas placed around the magnetic wheel A and the roller D. The ore is delivered through the hopper E to the riffle F, the belt traveling in the contrary direction, as shown by the arrows. In passing near the magnetic wheel the particles of ore adhere to the belt and are carried upward over the wheel. Thus they travel along on the belt until the latter reaches a water tank. At Weldon an automatic scraper delivers the concentrates to the shute from which they slide out of the mill, ready to be shoveled into cars. Those who are interested in the machine do not regard the fact that the concentrates are wet a disadvantage.

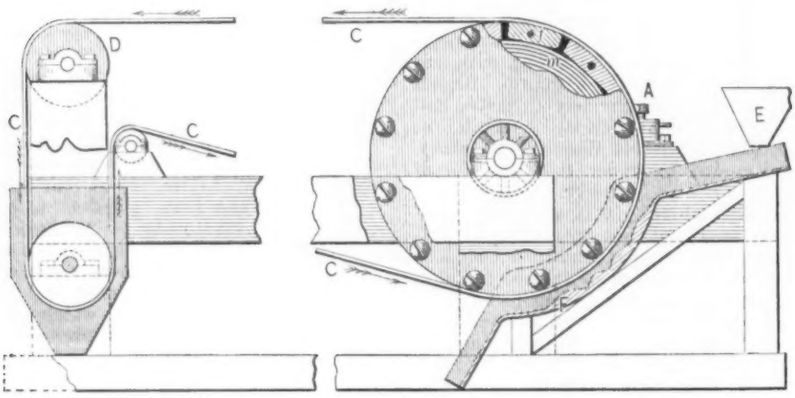


Fig. 1.—Side Elevation.

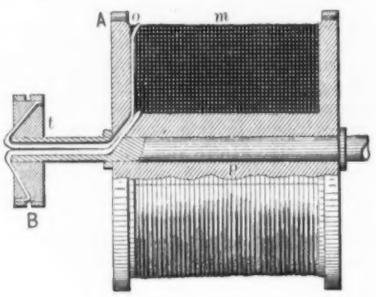


Fig. 2.—Section of Magnetic Wheel.

THE FINNEY MAGNETIC SEPARATOR.

Among the new corporations that have secured licenses from the Secretary of State, says the Chicago *Tribune*, is an old Eastern company, which pays a high compliment to Chicago's superior commercial advantages by demolishing a plant at Wilmington, Del., and moving to Chicago bodily. This company is the Chicago Electric Wire Company, and the object is to manufacture a somewhat new and improved wire for electric lighting, the wire to be carried underground. The wire, which was invented by Henry B. Cobb, is the first electric lighting wire that has been able to withstand the effects of the gases underground. The wire is of copper, incased in hard rubber insulators, and the insulation, in turn, is imbedded in paraffine and lead. A plant was established at Wilmington and a large business was done by the company, the larger share of it being in Chicago, already over 200 miles of the wire being in use here, while New York has only 50 miles. The old company found it to their interest to sell out. An immense plant at East Chicago was bought, and in 40 days the industry will be in running order, giving employment to 500 men. The capital stock is $1,000,000.

Electric Transmission of Power.

In a recent communication to the Paris Académie des Sciences, M. Marcel Deprez gave an interesting account of an installation he had erected at Bourganeuf in the Department of Creuse, France. The first attempt to light this town electrically was made two years ago, when a turbine was erected below a fall of water in the town itself, and the power thus obtained employed to operate dynamos. Unfortunately this particular fall on several occasions during the summer ran dry, and it thus became necessary to supplement the turbine by steam power. As, however, there were several falls in the vicinity of the town which were not subject to this failing, the municipality determined to erect a turbine at one of these and transmit the power to the heart of the town by means of a high tension electric current.

The site finally selected for the erection of the turbine was the Jarraud Falls, nearly 9 miles from Bourganeuf, where much more power was available than was actually required. At this point a cast-iron pipe 1 m. in diameter has been erected, which conducts a portion of the available water supply to a turbine with a horizontal shaft, which is capable of generating 130 horse-power, the fall being 98 feet 6 inches. This turbine has been erected on the ground floor of a building, on the first floor of which has been placed the dynamo. The turbine runs at a maximum speed of 130 revolutions per minute, and drives the dynamo by a belt at 650 revolutions. Attempts to regulate the turbine speed automatically were made when the installation was first erected, but this plan has since been given up for that of hand regulation. The dynamo has two armatures mounted on the same shaft and two straight field magnets. The second armature takes the place of the yoke piece of an ordinary machine, and M. Deprez claims that this plan considerably reduces the weight of the machine. In support of this he states that he has constructed in this way a 12 horse-power dynamo which weighed only 660 pounds, though neither the current density nor the speed of the machine were greater than common.

The field magnets of the above dynamo are separately excited by a low-tension machine, which supplies a current of 18 ampères at a potential of 90 volts. The armatures of the high-tension machine have a resistance of 2 ohms, and the electromotive force generated, when these make one turn per minute, is from 5 to to 5.5 volts. The wire on the armature is 0.0866 inch in diameter, and can carry without danger a current of 25 ampères. The line between the falls and the lighting station consists of two uncovered wires, of silicium bronze, 0 197 inch in diameter, supported by porcelain insulators on pine posts. This line has a resistance of 23 ohms, and even in wet weather its insulation is stated to be practically perfect.

The motor at Bourganeuf is similar in construction to the generating dynamo previously described, its magnets being excited by a current from the lighting machines. As, however, when the latter are at rest no exciting current can be obtained from them, accumulators are used for the starting, the motor being cut out as soon as the potential at the terminals of the lighting machine reaches 130 volts. The normal speed of the motor is 500 turns per minute, and it is regulated by altering the resistance of the transmission line in the following manner. Connected up with this line is a liquid rheostat by which the resistance of the line can be altered from a few ohms up to some thousands. Pure water constantly renewed is used in this instrument, and with it M. Deprez states that he has been able to open and close the 5000-volt circuit at Creuil 20 times a minute without damaging.

A correspondent calls attention to the fact that there is not a horse car line or dummy line in Vineland, N. J., for a district of 10,000 people. All the stores and business places are located in the heart of the city, and the people are obliged to come several miles to town to buy anything. What is needed first of all is a first-class dummy railroad line running from the West Jersey Railroad depot, at Vineland, up through the wide main thoroughfare, Landis avenue, which runs in a straight line to May's Landing (county seat), 18 miles beyond. This road could for the

present go up as far as the new Sea Shore Railroad, 8 miles, and then, if thought advisable, be extended to May's Landing. This might come quicker than at first supposed, as many thousands of acres there have changed hands recently to be so'd in small farms. There are houses and fruit farms all along on both sides of this 8-mile trip.

Moorhead-McCleane Co.'s Affairs.

A meeting of the creditors of the Moorhead-McCleane Company, proprietors of the Soho Iron and Steel Works, in Pittsburgh, was held in the office of George Shiras, their attorney, in that city, on Friday afternoon, the 18th inst. Mr. Shiras submitted the following statement, showing the assets and liabilities of the firm on September 1:

Assets, cash		$28,684.17
Accounts receivable:		
Good	$271,389.04	
Doubtful	2,318.70	
Suspense accounts	2,136.25	275,843.99
Bills receivable:		
Columbia Iron and Steel Company, payable one, two and three years, with interest	58,982.80	
E. Van Noorden & Co	321.21	
Oil Well Supply Company certificates, Chas. E. Speer, trustee	3,891.31	
Stock at works, crude material and iron on hand	267,290.67	$635,014.15
Real estate, exclusive of coke works	500,136.84	
Coke works, realty and improvements	148,391.54	
Property Second avenue and Brady street	6,382.79	
Furnace manager's house (Second avenue)	6,558.03	
Bellevue property (taken for debt)	930.98	
Railroad, rolling stock and three locomotives	49,065.86	
Mill buildings and machinery, galvanizing works, &c	699,020.51	
Open-hearth steel works	61,500 60	
Tools in mill, trucks, teams, &c	14,245.50	
Improvement account, mill departments	133,832.98	
Soho Furnace	312,188 93	
Improvement account, Soho Furnace	100,482.31	
Foundry and machine shop	6,473 05	
Stable	3,000.00	
Consumers' Forwarding and Storage Company, stock	8,700,00	2,050,909.42
Total		$2,685,923.57
Liabilities		
Bills payable	$529,421 58	
Accounts payable	112,585.81	$642,007.39
Estate Lydia G. McCleane, George F. McCleane, executor	8,000.00	
W. P. Wood, trustee	20,000 00	
Bills payable, due M. K. Moorhead	158,342.58	
Bills payable, due Geo. F. McCleane	61,785.38	
Bills payable, due W. J. Moorhead	18,524.00	
Account, M. K. Moorhead	946 39	
Account, George F. McCleane	4,863.71	272,462.06
Mortgages		400,000.00
Total		$1,314,469.45

From these figures it will be seen the firm represent their assets to be $1,371,454.12. The creditors were much pleased with the showing, and appointed two committees to examine the statement and report at a meeting to be held in Pittsburgh on Thursday, the 24th inst., when final action will be taken. The committee to examine into the value of the plant is composed of J. M. Bailey, Jno. H. McCutcheon, Isaac D. French. Wm. Roseberg of the Bank of Pittsburgh, Geo. Gorman of the Mechanics National Bank and R. S. Smith of the Union National Bank will examine the books. On account of the very favorable showing made by the firm, it is the general impression that they will have no difficulty whatever in securing an extension the five years in which to pay off their obligations. The entire plant of the firm continues in operation, and it is not expected that any stoppage will occur.

The Conqueror Scroll Punch.

The accompanying engraving represents a scroll punch just put on the market by Chas. G. Eckstein & Co. of 32 Liberty street, New York, which is so arranged that all shapes can be punched and slotted after having been brought to the desired curve. It has been necessary heretofore to space and punch the strips before bending, and as a consequence much difficulty has been experienced in bringing the holes into line for riveting. With the aid of this machine the strip is first curved to any desired shape and the slots and the holes punched without trouble wherever desired. It will be seen that the machine is operated by means of a hand lever, the plunger being connected by a pitman with an eccentric carried by the main shaft. Projecting from the bottom of the machine directly under the plunger is an anvil forming a rest for the strips. As will be observed, this anvil is in reality a plug, which, while having ample strength to resist any strain the machine is calculated to bear, is of such shape and size that strips curved in circles, having small diameters, can be readily placed upon it for punching. The machine can be easily changed from its arrangement for punching a circular hole to that adapted for making a rectangular slot. A simple attachment provides means for holding the punch to the bench. The punch is made throughout of steel.

The "Conqueror" Scroll Punch.

The Chicago Ship Canal.

Important action in the matter of the great ship canal to run south from Chicago was taken last week. The Drainage Commission adopted an ordinance that practically establishes the route by which the Chicago River will find its way to the Illinois River. Only condemnation of the land is now necessary, and by another ordinance which was passed Judge Goodrich, the attorney of the board, was directed to commence such proceedings immediately. The ordinance first passed contemplates the condemnation of land in a strip 800 feet wide along the Desplaines River from Summit to Joliet, where the canal will end. The canal will be 18 feet deep in the shallowest parts. Already property owners whose lands will be condemned are hustling around seeing how big a price they can ask.

The one important question still unsolved in reference to the canal is how to secure the requisite discharge of water down the west fork of the South Branch; but the engineers say that it will be secured even if pumping has to be done. It is calculated that when completed the flow of water will be sufficient to empty the Chicago River five times every day, and the canal will be navigable for the largest boats clear to the Illinois river.

The Drainage Commission, who have this work in charge, have permitted the matter to lag in such a disheartening way that predictions have of late been freely made that the whole affair would be abandoned. The action just taken, however, shows that the commission have no intention of permitting the enterprise to fail through their lack of energy. As our readers are aware, the cost of the undertaking is being borne by the city of Chicago, whose commercial and sanitary interests will be greatly promoted by the construction of this water way.

At a meeting of the Pittsburgh committee of freight agents representing the various lines entering that city, held in Pittsburgh on Friday, the 18th inst., it was decided to make a change in pig-iron rates in carloads from Pittsburgh to Eastern points. The new rates went into effect on Wednesday, the 24th inst., and are as follows per gross ton: From Pittsburgh to New York, $2.80; to Philadelphia, $2.40; Baltimore, $2.20; Albany, N. Y., $2.80; Oswego, N. Y., $2.40; Utica, N. Y., $2.40; Syracuse, N. Y., $2.25; Rochester, N. Y., $2. The reduction is a uniform one of 20 cents per ton to all the points named except Rochester, and to that place it is a reduction of 25 cents. These rates apply on pig iron only.

Our readers may relish the following bit of humor, reported to us as an actual occurrence by a prominent iron manufacturer. In dictating to a new stenographer he used the following sentence: "Will sell you 27 black sheet at two ninety." When the typewritten letter was handed him he read this statement: "Will sell you 27 black sheep at $290." The error was corrected with due respect to the feelings of the stenographer, who afterward sought to explain the misconception of terms to a friend as follows: "You see,

Mr. Jones is always talking about pig iron, and, of course, I thought there might be a good many other kinds of animal iron than pigs."

Standard Storehouse Construction.

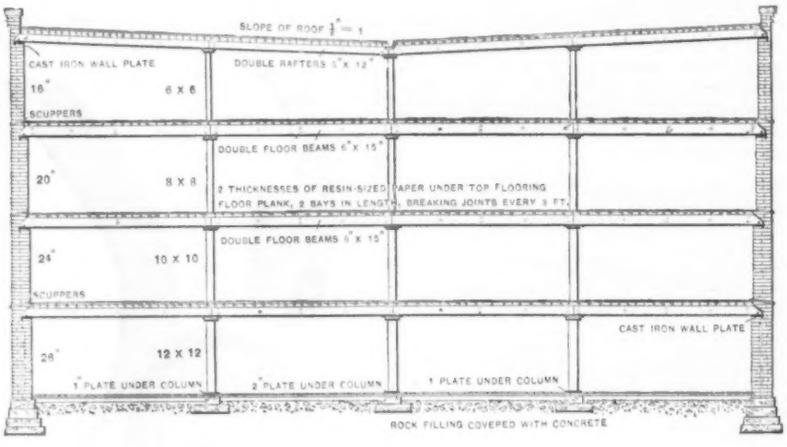
C. J. H Woodbury, vice-president of the Boston Manufacturers' Mutual Fire Insurance Company, describes standard storehouse construction as follows: These illustrations represent salient points in design for a mill storehouse several stories in hight, and include many features found useful in practice for convenience in operation and also securing the greatest measure of resistance to fire. This plan is not intended to take the place of the services of any mill engineer, but rather to assist in such work. It is important that the floor beams should be designed to sustain the greatest load ever to be placed on them, and the stories should be made low enough to prevent overloading, and also to prevent bales of material from being piled to great hight, the preferable method being to place bales on end. These floors, with beams of 20 feet span, laid 8 feet on centers, will sustain a load of 180 pounds per square foot, which is as much as would be required for raw material or finished goods of a textile or paper mill. The heavy drugs and dyestuffs would be placed on the ground floor. For convenience, as well as to separate the different hazards of raw material and finished goods, the building may be divided into two sections by fire walls extending through the roof. A storehouse one story in hight is recommended in preference to this design whenever there is sufficient quantity of level land at disposal for this purpose, as being cheaper, more convenient, and, when separated into small divisions by fire walls, the safest method of storehouse construction.

On reference to the drawing it will be seen that the floors are continuous, without openings, and of the standard slow burning construction—a type which has not yet been burned through by any fire starting under such a floor, unless there have been openings in the floor. To reduce water damage the floors are not level, but have a camber of 2 inches in the middle made by iron plates inserted under the columns in the basement. If it should become desirable to use the building for any purpose requiring level floors, they can be reduced to a level by removing these plates. Inclined iron tubes, with a light swinging cap on the outside, laid in the wall at the level of the floors, act as scuppers for the purpose of removing any water. The floor beams are preferably of Southern pine bolted together in pairs, leaving about 1 inch space between the beams. At the columns the beams are joined by dogs made of ¾-inch round iron, driven in at the top, and they are anchored to the walls by cast-iron wall plates, to which they are secured by means of a rib which fits into a groove crossing the under side of the beam. It is important that there should be a small space at each side and at the end of the beam, in order to allow free ventilation, for the purpose of preventing dry rot. The Goetz box anchor is a special form of wall plate which is especially adapted to such purposes.

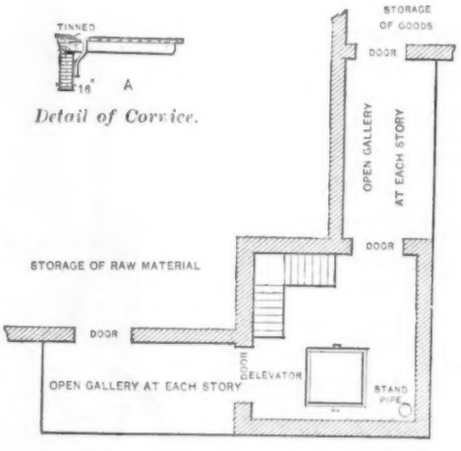
The under floor is made of spruce plank, generally 3 inches thick, planed on the under side and grooved at the edges, and fitted with hard wood splines. These plank are two bays in length, breaking joints at least every 3 feet. Over the plank are placed two thicknesses of rosin-sized paper before the top floor of hard wood is laid. The floor is smoother if laid across the line of plank, and the traveling loads moved in or out of the storehouse are better distributed than when the top floor is laid parallel to the plank. The floor should not be secured to the walls, but a narrow strip laid around the edges of the floor and fastened to the wall covers any openings due to shrinkage. The columns should be square Southern pine or oak, with iron cap, pintle and base, preferably cast in one piece, and secured to the under side of the beam by 6 inch lag screws. The caps should be large enough to give the beams ample bearing surface. If brick piers are placed in the basement, it is preferable rather than to insert bond stones in the piers, to use a plate of boiler iron the size of the pier, and containing a number of inch holes punched on both sides over a board, in order to produce as large burrs as possible, to securely hold the masonry.

It is generally preferable that the roof should slope toward the center ¼ inch to the foot, and the gutter should slope toward the drain pipes $\frac{1}{32}$ inch to the foot, but if the roof slopes towards the walls the detail of cornice A illustrates the arrangement of gutters. Access to the various stories is obtained only by means of a tower outside of the main building and extending above the roof, containing stairways, elevator and water pipes. At each story of the tower open galleries communicate to the rooms on that level. A doorway from the upper story of the tower affords a ready means of reaching the roof. It is often a matter of great convenience if the doorway at the first story of the tower is made large enough, and at the outside grade, so that a wagon can be backed directly to the elevator. It is unnecessary to provide these elevators with automatic hatches, as guard gates serve every purpose. For the elevators in such towers either hydraulic system or electric motors frequently furnish a more convenient means of applying the power than steam.

The system of tram rails hung from above, in connection with triplex blocks, as constructed by the Yale & Towne Mfg. Company, is a great convenience in handling the contents of storehouses. The

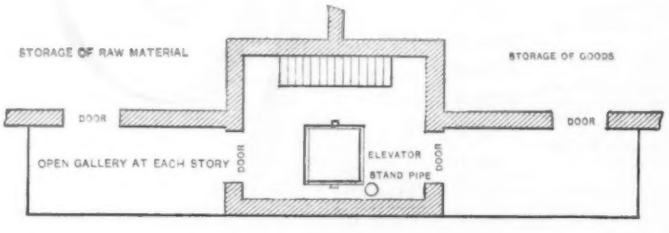


Vertical Section.



Detail of Cornice.

Stairway Tower at Corner of Store House.



Stairway Tower at Side of Store House.

STANDARD STOREHOUSE CONSTRUCTION.

walls extend above the roof, and the parapet should be laid in cement, because the moisture readily absorbed by brick would otherwise pass downward, and render walls in the top story damp. In some instances a course of brick dipped in coal tar is laid above the roof level. The illustration A shows a method of protecting a low parapet wall by plank which is tinned. This form of parapet also tends to reduce the amount of snow lodging on the roof. The window openings are small, and omitted on sides exposed to other fire risks; but if there is any contingency that the building will ever be used for other purposes it is advisable to lay the walls with arches and panels, in which openings can be made suitable for windows of larger size, necessary to furnish light for manufacturing purposes.

In addition to yard hydrants near the buildings there should be a 6-inch stand pipe in the tower, with two 2½-inch hydrants and hose at each story, and at the top story of the tower the stand pipe branches to a Morse Monitor nozzle on the roof, if there are any adjacent buildings which might be reached by streams from this position. A set of plugs for the roof drain pipes will allow the roof to be covered with water in case the property is endangered by sparks from burning buildings. Automatic fire alarms with thermostats form a valuable auxiliary to the fire apparatus in storehouses. If the contents of the storehouse are of such a nature that automatic sprinklers are advisable it is preferable to shut off the water during freezing weather rather than to rely upon the devices known as dry pipe systems.

The Foreign Commerce of Uruguay.—The report of the Director General of Statistics of Uruguay gives comparative statements of the foreign commerce of that republic for a number of years up to and including 1890. Although the total commerce of 1890 was exceeded slightly by that of 1889, it was $10,000,000 more than the average previous five years. The value of imports fell from $36,823,863 in 1889 to $32,864,627 in 1880. While the decrease amounted to $4,459,236 in comparison with the previous year, the imports of 1890 exceeded any former year than 1889, which year, following a long season of depression, witnessed a period of inflation beyond the natural requirements of the country; besides, the crisis of 1890 had a direct influence in diminishing orders from Uruguay merchants. That the country itself was prosperous is shown by the fact that the exports reached the sum of $29,954,107, which was $3,131,412 greater than during 1889, and over $1,000,000 more than the highest amount ever exported from Uruguay. Owing to the low prices obtained for wool during the year a very considerable amount of the clip was not exported, the growers holding their stocks for higher figures.

The members of the American Society of Mechanical Engineers are discussing the feasibility of a meeting on the Pacific Coast in May, 1892. The trip as outlined would be via Denver and Salt Lake City to San Francisco where the meeting is to be held. After the meeting the travelers are to go North to Portland via the Yosemite, returning by the Northern Pacific via Yellowstone Park.

The Chicago committee of the Central Traffic Association has issued notice that, taking effect September 22, the rate on scrap iron (per gross ton), in carloads of 12 tons or over, will be $1.60, Chicago to Muskegon, Mich.

THE WEEK.

An adjourned meeting is to be held this week at New Orleans to develop plans to establish ocean mail lines from that city to South American ports under the provisions of the Postal Subsidy bill.

At the half-yearly meeting of the directors of the Bank of England a statement was submitted showing that the net profits for the half year ended August 31 were £763,238, making the amount in rest £3,776,802. A dividend of 5 guineas per cent. was declared, leaving in rest £3,012,770. The chairman expressed the opinion that the guarantors of the Barings would not be involved in any loss. The report of the bank's operations was adopted and the meeting then adjourned.

Imports into India of kerosene oil from Russia are now in excess of those from the United States. In the three months of the current official year the total imports from America were 6,600,688 gallons, and from Russia 7,953,539 gallons. Special facilities have been created in Calcutta for this trade, and it has developed rapidly.

The Bureau of Statistics, in its report of the exports of bonded stuff in August, shows that the exports in the last month exceeded those of August, 1890, more than $18,000,000 in value. The increase was principally in wheat and wheat flour, but there was also an increase of exports of rye of 729,015 bushels, valued at $811,927, as compared with $88,793 for August, 1890. For the last two months the increase in value of exports over the corresponding two months of 1890 was more than $23,000,000.

The expenditures for pensions for the fiscal year ending June 30, 1891, as now officially stated, amounted to $124,415,951.40. In the fiscal year ending June 30, 1890, we paid $109,357,534, while in the year before that we paid $87,644,779.11. In the last ten years our pension payments have amounted to $776,282,100.07.

The whole number of acres of ceded Indian lands opened for settlement in Oklahoma by the President's recent proclamation is 839,406.

The Atlantic Transport Line, running steamers between Baltimore and London, have arranged to start a line between New York and London about November 21. The company have now under contract and building at Harlan & Wolf's, Belfast, Ireland, four twin screw steamships, each of 8000 tons cargo capacity.

As the safety of about 2,000,000,000 bushels of corn is supposed to have been assured by the high temperature of last week, each day's sunshine must have been literally golden.

There are engaged to-day in the building of new war ships for the Government something like 50,000 men. This force is scattered throughout the whole of the United States. It comprises the workmen in the shipyards all along the Atlantic Coast and on the Pacific Coast. It includes yards in the Chesapeake, as well as yards on the coast of Maine. Every principal port in the country is to some extent interested in the new development Away out in Western Pennsylvania, in Ohio, in Iowa, in Western New York, in West Virginia, way up in the interior of New Hampshire, to say nothing of the yards on the banks of the Delaware, the yards at Norfolk, the shops in Richmond, Va., the private establishments in New York City—all are engaged in war-ship work. New vessels for the revenue marine will next receive attention. In general, the new revenue cutters of the first-class may be expected to be 500-ton displacement vessels, of about 196 feet in length, 23 to 24 feet beam, and having a draft of under 10 feet. A speed of no less than 16 knots will be required, and a steaming radius of 3000 miles at a 10-knot speed will be exacted. The motive power will be furnished by triple-expansion engines. In calling for 16-knot vessels, comfort will be assured to officers and men.

The new Italian military arm will be of 256 caliber. The new gun weighs 8.2 pounds. It has a central magazine system working five cartridges. It is intended that the arm shall use smokeless powder and develop 2300 foot-seconds velocity.

The Tennessee Legislature, now adjourned, failed to do anything to relieve the mining troubles in that State, and more disturbance is expected.

Baltimore exported last year cattle valued at over $6,000,000, wheat and flour nearly $20,000,000, provisions about $10,000,000; also a large quantity of tobacco. Maryland's tobacco crop this year is about 27,000 hogsheads.

The Pacific Mail officers have arranged their proposals for mail service under the new subsidy law. Vice-President Houston expects the revenue from this source to amount to $400,000 in the first year.

Improved gun-making machinery of a superior kind is being introduced at the Washington Navy Yard. The new rifling machine for guns of large caliber will be one of the finest tools of its kind in the world. The machine will be capable of rifling guns of all sizes up to the 16-inch caliber 110 ton monsters, if it should be determined to make them of that size. Parts of it are already in position. The foundations are being put in for a number of large lathes, which will soon be delivered by a Philadelphia contractor.

The war cloud in Europe darkens. Among other signs, the Italian Government is urging the speedy completion of the men-of-war now being built, and has ordered others to complete their armaments.

The opening of the St. Clair tunnel on the 19th inst. was duly celebrated. The actual tunnel itself under the river is 6026 feet long. It is lined throughout with solid cast-iron plates, bolted together in segments—each segment being 5 feet long, 18 inches wide, and 2 inches thick, with flanges 5 inches deep—the whole lining weighing together 28,000 tons. The bolts and nuts for connecting the segments together weigh 2,000,000 pounds. The permanent way through the tunnel is laid with steel rails. The interior diameter of the tunnel is 20 feet, and ample means have been provided for thorough ventilation, and for lighting it throughout, when required, by the electric light. The road is practically level under the river, with approaches at each end on gradients of 1 in 50. The total length of the tunnel and approaches is 11,553 feet.

A lumber contract amounting to $8,000,000 and which will engage the milling capacity of eastern Texas has just been closed by the Reliance Lumber Company with the company who are building the railroad from Omaha, Neb., to Galveston.

A prominent vine grower of California who has just returned from Europe is convinced that on account of the prevalence of disease in the old country America ten years hence will be the main dependence for first-class wines, and he predicts that eventually the United States will lead the world in vineyard products.

According to the latest reports of the Naval Commission, the merchant fleet of Russia has 429 steamers and 4001 sailing vessels and barges on the Baltic, the Black, the Azov, the White, the Ice and the

Caspian seas. On the seas and the rivers of European Russia it has 1804 steamers and 20,095 sailing vessels and barges.

A new route to the New England States just opened over the Long Island Railroad, Housatonic Railroad, &c., takes in such important manufacturing cities as Waterbury, Bristol, Hartford, Manchester, Willimantic and other important cities.

Six ships undergoing repairs at the Brooklyn Navy Yard occupy the entire available space. A more serious difficulty is delay from the impossibility of obtaining skilled ship fitters and riveters in the numbers required.

Tobacco growers in Connecticut expect to get $3,000,000 for this year's crop. Last year's sold for $1,800,000.

Lower prices for coffee are predicted as a result of this year's heavy crop in Brazil, estimated as high as 9,000,000 bags. The rise from 7¾ cents per pound in 1885 to 16 cents now is attributed to short crops and demoralization of labor in Brazil since the decree of emancipation.

Engineers digging for the foundations of an observatory on top of Mt. Blanc found the ice 90 feet thick. The scheme was abandoned.

The news that the Asiatic kingdom of Corea has abolished the office of Consul-General of Corea in New York is of interest in view of the fact that it was through the influence of the American Government, in the negotiation of the Shufeldt treaty ten years ago, that Corea was first opened to the commerce of the world. Between the encroachments of Russia, who seeks a naval station on the coast, and the rival claims of China, Corea is liable to be wiped out.

The Chicago *Herald* says the Western roads are refusing to permit their cars to go east of their junction points with the lines to the seaboard. All roads are buying new equipment, the most noteworthy order being that of the Burlington system for 2000 box cars of 60,000 pounds capacity each, the largest size built.

The new ship Vulcan of the British Navy is a floating workshop, constructed with the object of sending her wherever an English warship may be, thoroughly equipped for making all sorts of repairs and fittings. She is a vessel of 6620 tons displacement, about the same as that of American armored cruiser Maine. The workshop on this vessel contains five lathes, two shaping machines, two drilling machines, slotting, shearing and punching machines, a circular saw, a blacksmith's shop, molder's shop with hot-air furnace, and a dozen large vises.

A part of the iron ore fleet at Chicago has been turned into the grain trade to forward the large quantities of wheat and corn now offering.

Japan has already arranged for the transportation of 1500 tons of exhibits to Chicago, at a cost of about $12 per ton for the whole distance.

Reports to the Treasury Department up to August 31 show that there were shipped from Philadelphia during the first eight months of this year 130,739,756 gallons of mineral oil and the products resulting from its distillation. For the corresponding period in 1890 the shipments were 102,679,387 gallons. The shipments from New York during the first eight months of last year were 297,268,462 gallons; this year they fell to 279,055,719 gallons. The total shipments this year from all ports for the period mentioned were 428,968,014 gallons, worth $30,176,878, against 421,148,639 gallons, valued at $31,807,870, for the corresponding period last year.

OBITUARY.

JOHN CAMPBELL.

John Campbell, president of the Hecla Iron and Mining Company of Ironton, Ohio, died at that city on Sunday, September 6, in his 84th year. Mr. Campbell was one of the pioneer iron manufacturers of Ohio, and one of the most active. Mr. Campbell was born near what is now called Ripley, in Brown County, Ohio, on January 14, 1808. There, in his early manhood, he engaged in business with an uncle, and thence went to Hanging Rock. In 1833 he was employed in building the old Hanging Rock Forge, long since demolished, and in the same year he and Andrew Ellison built Lawrence Furnace for J. Riggs & Co., and took stock in it. In 1834, with Robert Hamilton, he built Mount Vernon Furnace, and removed from Hanging Rock to manage it. From this furnace grew up those large iron interests which for a period of 30 years were afterward known under the firm name of Campbell, Ellison & Co. of Cincinnati. It was here that he made the change of placing the boilers and hot blast over the tunnel head, thus utilizing the waste gases. In 1836, through the guarantee against any loss by Mr. Campbell and three other ironmasters, Vesuvius Furnace was induced to test the hot blast principle. This, the first hot blast ever erected in America, was put up by William Firmstone.

In 1844, with John Peters, Mr. Campbell built Greenup Furnace, Kentucky, and, in 1846 Olive Furnace, Ohio, to which has since been added the Buckhorn Furnace. In 1847 he built Gallia Furnace. In 1849 he became prime mover and principal stockholder in the organization of the Ohio Iron and Coal Company, and was made their president. This company purchased 400 acres of land 3 miles above Hanging Rock and laid out the town of Ironton. Mr. Campbell gave the new town its name.

In 1849 he built Keystone Furnace. In 1850 he removed from Hanging Rock to Ironton, and, with the Ohio Iron and Coal Company purchased La Grange Furnace. The same year he built the stove foundry of Campbell, Ellison & Co., and in 1851 was one of the founders of the Iron Bank of Ironton, now known as the First National Bank. In 1852, besides taking large stock in the Ironton Rolling Mill, now known as the New York and Ohio Iron and Steel Works, he subscribed for one-half the stock for building the Olive Foundry and Machine Shop. He also purchased the celebrated Hecla cold-blast furnace. In 1853 he became one of the largest stockholders in the Kentucky Iron, Coal and Mfg. Company, which founded the town of Ashland, Ky. With D. T. Woodrow he built Howard Furnace. In 1854, with S. S. Stone of Troy, N. Y., and others of Ironton, he built a large establishment for the manufacture of the iron beam plow. The same year he built the Madison Furnace, and also become one of the heaviest stockholders in the Star Nail Mill, one of the largest in the country, and now known as the Belfont Iron Works. In 1857 his rolling mill interests extended to Zanesville, Ohio, where he was one of the incorporators of the Ohio Iron Company.

ANDREW HARTUPEE.

Andrew Hartupee, a well known engineer and machinist of Pittsburgh, died at the residence of his son, W. D. Hartupee, at Charleroi, Pa., last week. He was an inventor and produced the first compound engine and the first nut-making engine. During the Rebellion Mr. Hartupee was engaged as a boat builder, and subsequently built the Pittsburgh Water Works. He was born in Pittsburgh in 1819, and has always lived in that city with the exception of the last few years, when he made his home with his son at Charleroi. Mr. Hartupee leaves one son and three daughters.

WILLIAM M'CREERY.

Wm. McCreery, one of the best known business men of Pittsburgh, died at his residence in Allegheny on Wednesday evening, the 16th inst. Mr. McCreery's death was caused by Bright's disease, and he leaves a wife, one son and two daughters. Mr. McCreery was born in Washington County, Pa., August 14, 1828. In 1851 he came to Pittsburgh, obtaining a position in the commission house of Springer, Harbaugh & Co. In 1856 he organized the firm of Hitchcock, McCreery & Co. He organized a company in 1860 with a capital of $200,000, which built the grain elevator burned during the railroad riots of 1877. Since 1858 he had been a member of the Board of Directors of the Citizens' National Bank. He was a member of the Chamber of Commerce of Pittsburgh, and at one time one of its vice-presidents. In 1864, under the firm name of McCreery, Bailey & Co, he purchased the Mahoning Iron Works, which he managed for seven years. While engaged in this work he completed the Lawrence Railroad, and constructed a road connecting Pittsburgh with Ashtabula Harbor. He was one of the first who proposed the construction of the Pittsburgh and Lake Erie Railroad. In 1884 the Pittsburgh, Cleveland and Toledo Railroad was built and equipped largely by his efforts. In 1878 Mr. McCreery organized the Montour Railroad and the Imperial Coal Company, and he also organized the Federal Street and Pleasant Valley and People's Park Passenger street railways.

WILLIAM H. H. ROBINSON.

William H. H. Robinson, lately connected with the Crozier Iron Company of Upland, Pa., died on Sunday at Colorado Springs. He had been suffering from consumption for several years and recently returned from Europe, where he had been sojourning for the benefit of his health. Mr. Robinson was born in Wakefield, R. I., 38 years ago. His family are well known in New York. One of his brothers, George H. Robinson, was president of the Garfield National Bank.

W. L. SCOTT.

Ex Congressman W. L Scott of Pennsylvania died suddenly at Newport, R. I., 19th inst. He was identified with several of the prominent industrial interests of the State. In addition to large railroad interests he became extensively interested as an iron manufacturer, operating in Shenango Valley and at the Hickory Mills in Erie. The numerous strikes and labor agitations, together with the unsettled condition of the iron market, were too much for Mr. Scott's high nervous temperament, and when his mills were burned at Erie in 1883 he did not rebuild. He also engaged extensively as a coal operator, first in the soft coal regions along the Youghiogheny River on the Baltimore and Ohio Railroad, principally at Scotthaven, also on the Monongahela, in the vicinity of Elizabeth. His extensive soft coal interests at Spring Valley, being 20,000 acres in extent, were scarcely more important than his interests in the Wyoming Valley region in Pennsylvania. He was in the 64th year of his age.

WILLIAM C. STROUD.

William C. Stroud, a member of the firm of Burnham, Williams & Co., proprietors of the Baldwin Locomotive Works, died on the 20th inst. at his summer residence at Rosemont, aged 54 years.

The Iron Age

New York, Thursday, September 24, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS KIRCHHOFF, - - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Index to Iron Age, Vol. XLVII.

A copy of the Index of "The Iron Age," Volume XLVII, January-June, 1891, will be sent to subscribers on application.

The Coming Boom.

A discussion of the situation with many thoughtful and experienced members of the iron trade leads to the conviction that a notable rise in the prices in the leading lines in iron and steel must be expected. The only question upon which there is serious disagreement is on the point when the markets will advance, and to what extent the upward movement will go before the impelling force is exhausted. On the general issue of the probability of better prices, the concensus of opinion points to the exceptionally favorable prospects which our enormous crops, coupled with a very active demand for them, insure for us. It is argued that the enormous sums of money which must flow into the hands of our farmers cannot help having a stimulating influence upon all kinds of business. We must expect that the farmers will purchase liberally supplies and machinery, household goods and even some luxuries, and that many will be able to free their property from encumbrances. We must look forward, therefore, to more than the usual demand from the agricultural population. There will be a good deal of displacement of investment funds, with the activity in new enterprises which that begets, an activity which is sure to tell on the machinery and allied trades. The enormous tonnage which the large crops put upon the lines of transportation promises to render their managers more peaceful, and to put them in a position when requisitions of division engineers need pigeon-holing no longer. We expect to see house building operations stimulated all over the country, and all those share in greater activity who furnish supplies of all kinds.

That the great iron, steel, hardware and machinery industries will find the demands upon them multiply there can be no doubt whatever. Indeed, so general has been this expectation that a good deal of disappointment has been felt because the high hopes formed have not been realized. So far as the iron trade is concerned, we are inclined to believe that the chief reason for the weakness repeatedly displayed lies in the condition of the steel rail trade, which we have fully discussed in a recent issue of *The Iron Age*. But it does not by any means follow that because the outlook for the rail trade is gloomy for the next few months, there will not be very liberal buying later on.

Some facts should be thoroughly considered by all those engaged in the iron and allied trades. Although the rail mills have been consumers of pig iron at only the rate of about 125,000 to 150,000 tons a month, the stocks of pig iron have not increased much in the face of a production approaching the largest ever made in this country. Yet active work at the rail mills would easily call for 50,000 to 75,000 tons more per month. Such a quantity added to the demands for iron from other quarters, as the result of general business activity, would simply strain our furnace capacity to the utmost.

It must not be forgotten that beyond a certain point it needs a very rapid increase in the market prices to bring into operation plants long idle, and that there must be some reasonable assurance that higher values will prevail for some time. Generally, raw materials follow increased demands for product very closely and add to the enhanced cost.

We are inclined to the belief, therefore, that prices will not show much variation until the market for rails gets into better shape. As soon as the railroads begin in earnest to call for the material which they require for renewals the large rail mills will relax their pressure upon the mild-steel trade and its many branches, but the advancing markets will probably not develop seriously until investors and speculators have given substantial encouragement to schemes of new construction. At the present time the prospect in that direction does not look encouraging, but three months hence they may appear warranted by general prosperity and may be eagerly entered into.

A consideration of the condition of affairs in the rail trade would point to the conclusion that a notable rise in prices cannot well be expected during the balance of this year, but the anticipation of requirements for 1892 may lead to the beginning of a boom before this year is closed.

As was noted in these columns some weeks since, the owners of the modern freight steamers on the Great Lakes find a steadily increasing demand from shippers. Ore-mining companies and grain merchants are bidding against one another for vessels as the season advances. Thus far the ore trade has the preference with the vessels plying on Lake Michigan, but grain rates are advancing in a way to attract carriers from ore to grain, so that ore rates will also have to be marked up. The vessel men are having their harvest and the result is now almost certain to be seen in a revival of the lake shipbuilding interests the coming winter.

The blowing in of another coke furnace of large capacity at Chicago marks a fresh step toward the control of the Northwestern pig-iron trade by the local furnaces. The addition of 200 tons a day to the pig-iron production of the Northwest means the displacement of a considerable quantity of foundry iron heretofore furnished from other sources, unless the local consumption has latterly increased to that extent, which is hardly the case. Outside of the Illinois Steel Company's works there are now but two coke furnaces in that section not in operation. One of these is the Minerva, at Milwaukee, and the other is the furnace at Duluth, long since completed, but not blown in. The Minerva furnace is in good condition to be operated and it would not be surprising to see it started before long with the improving prospects for the iron trade. The Duluth furnace is understood to be now the subject of negotiations by practical iron manufacturers who propose to manufacture Bessemer pig iron for the new West Superior Steel Works.

The Gold Movement.

Some time since the prediction was made that the return movement of gold would begin in the middle of September. The return flow of the yellow metal has begun. It was apparently artificially stimulated at first, but very soon came naturally, and is now likely to continue in spite of some obstacles placed in its way. To date the total sum arrived and advised equals about $5,000,000, from which moderate sums, however, must be deducted as metal in transit to the Antilles. To some extent it is mere guesswork to attempt to reach any data bearing on the question as to what these gold shipments are in payment for. It is pretty well known that English speculators have been heavy buyers of American railroad securities during the past few weeks. The conclusion has been generally reached that the bulk of the gold thus far engaged is in settlement of such accounts. If that is true, then there is every prospect of further large imports of gold to cover our prospective heavy sales of cereals, unless a marked decline of goods in foreign markets places our importers into the position of selling largely in this country. In consequence of general prosperity, American consumers may be expected to buy liberally of many goods in which the market is controlled by foreign makers, and to that extent at least the volume of imports is likely to increase, offsetting, partially at least, heavier export food shipments. Foreign nations will pay to some extent for their articles of necessity in luxuries required by American consumers.

Eminent financiers have expressed the opinion that we must not expect to recover at once all the gold which we sent out earlier in the year. But everything thus far does point to our receiving a very large share of it. To the business community this is an additional safeguard against very tight money. With speculation as active as it has been lately, temporary squeezes may be expected, but we believe that the time has passed when any long continued scarcity, hampering all business operations, need be feared. With ample funds to move the enormous crops, and a steady, reassuring flow of the yellow metal from abroad, American business enter-

prise will develop freely in the near future. Many merchants are looking forward with some apprehension to the silver agitation and the coming contests in the political world. The dissatisfaction with conditions prevailing during last winter and summer among the agricultural classes was at the bottom of the cry for more money. The brighter outlook will rob this agitation of much of its force, while political troubles do not make much impression when commerce and industry are so prosperous as to leave little time for their consideration.

A Prospective Tin-Plate Plant at Pittsburgh.

From reliable source comes information to the effect that a tin plate plant, which in size and capacity will exceed any other similar plant now in erection or contemplated in this country, is to be located at Pittsburgh. The site selected for the plant is Millvale, just outside the limits of Allegheny City, Pa., and across the Allegheny River from Pittsburgh. The plant to be used for the manufacture of tin and terne plates is that known as the Millvale Rolling Mill, which for a great many years was operated by Graff, Bonnett & Co. A few years ago this firm failed, and the entire plant of the Millvale Rolling Mill Co. was sold to a syndicate representing the creditors. Connected with this syndicate are some prominent Pittsburgh capitalists, among whom are F. N. Hoffstot, Jas. M. Bailey, Jas. W. Friend and Jas. Pickands of Cleveland, Ohio. In order to carry out the scheme as at first proposed, F. N. Hoffstot, mentioned above, went to Europe several months since with the intention of securing the services and financial aid of Henry Phipps of the well-known firm of Carnegie, Phipps & Co., Limited. Part of Mr. Hoffstot's mission to Europe is to sell the entire plant of the Millvale Rolling Mill Company to a syndicate of English capitalists. These capitalists in turn are to buy all interests in the plant now held on this side of the water. Should this be accomplished, Mr. Hoffstot and Mr. Phipps are to take a large amount of stock in the new company, and Mr. Hoffstot, whose home and business are in Pittsburgh, will be the representative and the active business man of the concern in this country. The plant of the Millvale Rolling Mill is one of the most complete in the country, and it is claimed that for a small outlay of money it can be converted into a complete plant for the manufacture of tin and terne plates. The equipment of the Millvale Rolling Mill is as follows:

22 Boiling Furnaces.
14 Double Furnaces.
Large Squeezer, Shafting and Gearing.
2 Trains of Muck Rolls.
Engine and Machinery to drive Muck Mill.
2 Pairs Muck Shears and Engines.
Ore Mill Crushers and Engines.
Bar Mill Train, 16 inch.
8 Double Shears and Engines.
Guide Mill and Engine and Gearing.
12-inch Train.
Hoop Mill Train.
Large Engine and Gearing to drive the above trains.
10-inch Mill Train.
Engine and Gearing for 10-inch Mill.
12 Large Heating Furnaces
6 Cranes, with Gearing.
2 Steam Cranes.
1 Large Plate Mill Train with steam lift.
Engine and Gearing to drive Crane.
9 Pairs of Platform Scales.
Large Double Shear, Shafting and Engine complete.
1 Smaller Shear and Engine,
10 Danks Mechanical Boiling Furnaces.
1 Universal Mill Train.
2 Large Reversing Engines for Universal Train.
1 Universal Squeezer for Danks Furnaces.
1 Large Steam Hammer.
1 Large Fan and Air Pipes.
Engine and Machinery to operate same.
1 Large Heating Furnace.
Universal Mill Train, straight and cooling beds complete; conveyors complete.
1 Pair Large Marvin Engines and Gearing.
3 Siemens' Gas Furnaces, with producers and flues.
1 Large Shear with engine complete.
28-inch Plate Mill Train.
Engine and Gearing for Plate Mill.
2 Siemens Furnace Producers and Pipes.
2 Pairs Shears and Engines.
6 Batteries of four Boilers each.
Pump House and Water Tank.
2 Cameron Pumps.
1 Pair of Track Scales.
Blacksmith, Machine shop and Roll Shop.
Railroad Sidings.
1100 tons of Floor Plates.
Water, Steam and Gas Pipes, Valves and connections.
2 10-ton Siemens-Martin Open-Hearth Furnaces, with hydraulic cranes complete.
60 Dwelling Houses.
1 Manager's House with stables.
1 New Frame Mill Building, situated 600 feet from iron building, size 160 x 325 feet, with sheet-iron roof.
32 Boiling Furnaces, or 16 Double Furnaces.
1 Double Muck Train.
1 Large Engine to drive same.
Ore Mill, Crusher and Engines.

While all the details of this project have not as yet been completed, from present outlook the deal will go through, and Pittsburgh will have one of the largest tin-plate plants in the country. Additional details regarding this new enterprise will no doubt be forthcoming in a short time, as Mr. Hoffstot is expected home from Europe some time during October.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., September 22, 1891.

The chiefs of the different bureaus of the Navy Department, who have commenced the compilation of the data of their respective branches of administrative duty for their annual reports, have been instructed to prepare the usual abstracts of these official narratives of the year's doings for the use of the Secretary in the preparation of his own official *résumé* for submission to the President.

The report of Secretary Tracy will be an exceptionally valuable and interesting document, as the past year marks an exceptionally active period in the construction of new vessels for the navy. Although the late Congress authorized but one additional vessel, a protected cruiser, nearly $17,000,000 were appropriated to continue the work on the vessels, great and small, which have been under construction for the past year or two, and are rapidly nearing completion. The vast sums set apart by other governments for naval construction make our Congressional appropriations look small—for instance, England, $90,000,000; France, $42,000,000; Germany and Russia, about the same as France; Italy and Spain, about $23,000,000 each; the United States, $16,607,000 for the fiscal year 1891-92.

The Secretary, however, in his report will be able to make a fine showing in the number and condition of the vessels. The following is an official statement of the condition of the work on vessels still in the hands of contractors: Armored battleships, 18-inch armor, Indiana and Massachusetts, at the Cramps', Philadelphia, and Oregon, at the yards of the Union Iron Works, San Francisco, cost $3,200,000, will be afloat about November, 1893. The armored cruiser New York (Cramps') will be launched in the summer of 1892. The harbor-defense ram, by the Bath Iron Works, contract expires July, 1892. In the same year and month the practice cruiser at the yard of S. L. Moor, Jersey City, will be ready for the water. The spring of 1893 will witness the launching of the great protected cruiser No. 12, with her triple screws, from the Cramps' yard. At the same time the Union Works will be ready with No. 6 of the same class. The protected cruiser No. 13 will be fairly started very soon. The two torpedo boats and three steel tugs will be pushed ahead rapidly.

The Secretary, in addition to the above enumeration, will also refer to the powerful monitors Amphitrite, Miantonomoh, Monaduock, Puritan and Terror, ready to receive their armor and guns, and the cruisers 7 (Cincinnati), 8 (Terror) and gunboats 5 and 6 are progressing.

The Secretary will be able to point with pride to the launching of the armored cruiser Maine, 6638 tons, at the New York Navy Yard, Monterey and coast defense ironclad at San Francisco. The Bennington is also practically ready. Cruiser No. 9 will be added to the list of new vessels afloat very soon. The Secretary will also be able to report with pride on the speed of the ships in the different types. The Philadelphia in a sea trial made 19.678 knots an hour. Some of the records the Secretary will point out are:

	Knots
Philadelphia	19.678
San Francisco	16.633
Newark	19.5
Concord	17.
Bennington	17.

The Secretary will also give deserved importance to the subject of engines. The Bureau of Steam Engineering is turning out finer engines and making more important improvements now than has ever been accomplished by former Administrations.

The Vibration of Torpedo Boats.

In a recent number of *Le Yacht*, M. Normand, the well-known torpedo boat builder, discusses the question of the vibration of lightly built ships when driven by engines running at high speeds. This question is of great importance. Some of the earlier torpedo boats are said to have vibrated so much as to loosen the stopping in the teeth of an inspecting officer, and quite a number of our recent war vessels of the torpedo cruiser class have not been worked at their intended speed on account, it is said, of the excessive vibration. M. Normand has studied the question particularly with reference to a twin screw torpedo boat he is building for the French Government. This boat will displace 130 tons, and be driven by engines of 2300 indicated horse-power. The engines will be of the vertical tri-compound type, with the cranks at 120°. Usually these cranks are fitted with counterweights, but it is impossible to do more than balance the cranks and the heads of the connecting-rods, and there remains to be balanced the vertical forces due to the inertia of the pistons, the piston rods, and the upper half of the connecting rod. At the speeds now used—viz., 360 revolutions per minute for the boat in question—these forces are enormous, and owing to the bigger piston in the low-pressure cylinder, the strains are greater in this cylinder than in the other. In an engine of the type considered the centrifugal forces will be as follows:

	Weight of piston.	Maximum pull due to inertia.	
		At bottom of stroke.	At top of stroke.
	Pds	Pounds.	Pounds.
Low-pressure cylinder	415	10,000	19,500
Mid-pressure cylinder	320	7,400	11,900
High-pressure cylinder	258	6,600	10,200

These strains are comparatively high, and though they balance themselves in part

they may, since there are two engines, be doubled at any moment when the two synchronize. In such a case the vibrating couple is applied to the least dimension of the boat, the weight of which, considered as a vibrating rod, does not exceed 40 times the forces causing it to vibrate. Treating the subject mathematically, however, M. Normand finds that if the three pistons were made of exactly the same weight the forces of inertia would balance each other at all parts of the stroke, whatever the relation between the length of the crank and connecting rod. This, then, is what he proposes to do in his new engine, the increase in total weight being only 0.3 per cent. This device, however, only partially accomplishes the object in view. The inertia forces, since they act along the direction of their piston rods, even when they are zero as a whole, will yet give rise to couples, tending to vibrate the engine framing in a fore-and-aft direction. In order to destroy this couple effectually it is necessary to connect the engine columns by diagonal bracing fore and aft, and to firmly connect the upper portion of the engine, as well as the bottom, to the framing of the vessel. In this way M. Normand hopes to finally overcome all difficulty from vibration in fast torpedo boats.—*Engineering.*

The New York.

Work is so well advanced on this vessel that she will be ready for launching about the middle of October. The steel castings for the propeller, struts and stern tubes are now being fitted and bored. This work, together with a few sheets of hull plating in the wake of the struts, and the fitting of some of the sea valves being all that is necessary before she takes the water. The New York will be the largest addition up to date to our new navy. Her particular place in it is that of a cruiser and commerce destroyer. The attempt, and from all appearances it will be a successful one, to combine high speed, a powerful battery, great coal endurance and good protection against shot, has resulted in a large ship, 380 feet long, 64 feet breadth of beam, 24 feet draft and 8100 tons displacement.

Progress on her has been rapid. Since the award of the contract in June, 1890, 19 of the 30 payments have been called for, making a total payment of about $600,000 out of the contract price of $2,985,000. The propelling and auxiliary engines are partially executed in the shops, and parts not erected are well advanced towards that point. There are four sets of three-cylinder triple expansion engines, two sets on each shaft. A disconnecting coupling is fitted between the forward and after sets. This coupling will have to transmit 4000 I. H. P. to the after section, and be easily connected and disconnected. It consists of a hollow cylinder of forged steel cut away on its inner surface to form radial projections that fit into recesses formed on the cylindrical surface of the shaft coupling disks. A groove at the forward end of the cylinder carries a loose wrought-iron collar faced with brass. Two screwed shafts, one on each side of the main shaft, gear into projecting nuts fast to the collar. The screwed shafts are turned, and the cylinder placed in or out of gear with the coupling disk of the after engine by means of a cross shaft and worm gear. The projections on the shaft-coupling disks are steel faced, the faces being secured by counter-sunk screws. The length of the coupling cylinder is 10 inches, thickness 3 inches. Outside diameter of shaft coupling disks, 2 feet 8 inches. There is a play of ¼ inch between the end faces of the shaft coupling disks. Provision is made for coupling the shafts in such a manner that the proper sequence of the cranks between the forward and after engines is preserved.

The original plans provided for two engine rooms, one on each side of the ship, each containing two sets of engines. This has been changed so that now each set has its own compartment. Combined gear is provided so that when two sets of engines are at work on one shaft the two sets can be handled from one engine room. Each engine compartment is provided with its own condenser of cast brass, 5 feet 9 inches in diameter, 10 feet 9 inches long, ⅛ inch thick. It is made in three sections, joined together by flanges secured by bolts and nuts. The centrifugal circulating pumps are of cast brass, with a divided casing. The air pumps are of the Blake type.

The main steam pipes are of copper, banded every 6 inches with steel bands 2 inches wide. The connecting pipes between the receivers are cast of composition.

The boilers as constructed present no particularly new features, except their large size and heavy sheets. They are of the cylindrical double-ended type, 15 feet 9 inches in diameter, 18 feet long, with four furnaces in each end, two furnaces in each end having common back connections. The boiler shells are 1 13/16 inches thick, double-butt strapped and treble riveted on longitudinal seams and treble riveted lap joints on circumferential seams. There are three longitudinal and three circumferential courses in each boiler. The New York will be one of the fast vessels. A sea speed of 19 knots is expected, the engines being of 16,000 aggregate horse-power. The 1500 tons of coal she carries ought to give a steaming radius of 13,000 miles at a speed of ten knots.

She is well protected for a cruiser, having a belt of 3¾ nickel steel armor extending the length of the machinery space, a protective deck, 6 inches thick on the slope and 3 inches on the flat over the machinery and magazines, and 2½ inches thick elsewhere. There will be a cellulose belt 42 inches thick, extending all around the ship between the protective and berth decks. As a cruiser destroyer she is heavily armed, having a battery of six 8-inch breech-loading rifles, four of the six being protected by barbettes 10 inches thick and sloping circular turrets 7 inches thick; 12 4-inch and six 6-pounder rapid-firing guns, with shield protection, and ten small machine guns. The New York was laid down as armored cruiser No. 2, the Maine being No. 1. Her large size and high freeboard ought to enable her to keep her speed and fight her battery in almost any weather.

Ohio Tin Plate.

It has been known for some time that the Cincinnati Corrugating Company, whose plant is at Piqua, Ohio, were making practical efforts toward the establishment of a tin plate works, and the earliest result of this effort is a very handsome lot of terne plates that the company have produced within the past ten days. A sample of the lot which has been forwarded for our inspection shows it to be a high grade of roofing plate of smooth and even finish, with no uncoated spots to prophesy rust. The surface is more bright than with the common run of imported plates, showing that a considerable amount of tin was used in the mixture. The sheet is of No. 30 gauge, corresponding approximately to an IC plate, though, accurately speaking, it is a little lighter, which is to the credit of the Cincinnati Corrugating Company, because it is in rolling the thinner gauges that the most difficulty is experienced. A feature of this plate is that it is an American product throughout. The black plate was made from Bessemer steel billets manufactured at Middleport, Ohio, and rolled by the Piqua Rolling Mill Company. The pig tin used in the coating came from the Temescal mines, San Bernardino County, Cal., and the lead was from the Missouri mines. The manufacturers hope to turn out a still better plate as soon as the mill is equipped for cold rolling, which will enable them to put a better surface on the black sheet before tinning. In spite of the fact, however, that the present lot of plates were not cold rolled the terne coating presents a surface that will compare favorably with many of the better grades of imported plates.

Street Surface Railways.

John N. Berkley, in a report to the American Street Railway Association, refers as follows to the growth of the industry represented:

Five years ago the only street surface railways which were in successful operation anywhere in the United States were horse and cable railways. Within that five years more than 4000 street cars have been electrically equipped, and to-day more than 3000 miles of track in 300 cities and towns of this country have been constructed, on which these electric cars are run with satisfaction to the people, and, in the main, with profit to the companies operating them.

The development of the street railway has had as much to do with the growth and prosperity of the towns and cities of this country as, or, perhaps, more than, any other one thing. The transportation of people by street railroads is most intimately connected with the social and business life of the people. Nearly 500 cities in the United States have street railway systems in operation. More than 800 corporations are operating street railways in such towns and cities. As many as 30,000 street cars, horse, cable and electric, are to-day running upon the 8000 miles of street railroads in this country. In these cars, and on these tracks, are carried as many as 3,000,000,000 of people yearly, or 50 times the entire population of the United States. When we consider that the number of people carried by all of the steam railroad companies in all of the States of this Union last year is estimated at less than 500,000,000, and that more people are carried on the street surface railroads in the city of New York, in a year, than are carried by all the steam railroads of the State in the same period, we come to have some conception of the immense importance to the people of the rapid, efficient and safe service of street cars in the rapidly growing cities and towns of this wonderfully prosperous country. Think for a moment of the daily loss to the people of any city where horse cars are run at from 4 to 6 miles an hour, as compared with the operation in the same city of electric or cable cars running from 6 to 12 miles an hour. Consider the immense increase in the value of property in our municipality, caused by the introduction of rapid transit. Consider the wholesome influence upon the people of every community where the husband, or other head of a household, is able, by means of facilities of quick transportation, to take his mid day meal with the members of his family. The best thought of this time may well be expended upon this great question of furnishing quick, safe, cheap and comfortable transportation to the people whose lot it is to dwell, as dwell they do in such vast numbers, in the towns and cities of this land.

MANUFACTURING.

Iron and Steel.

The Solid Steel Company of Alliance, Ohio, manufacturers of steel castings, advise us that there is no truth in the report that they were contemplating extensive additions with a view of doubling their capacity. This firm have recently made arrangements to manufacture the couplings of the Eureka Steel Car Coupler Company. The coupling weighs 185 pounds to the foot. A thorough test of it will soon be made on the Chicago and Nortwestern Railway.

Wm. Swindell & Brothers, engineers and contractors, Pittsburgh, Pa., have completed the erection of six of their improved gas producers at the plant of the W. Dewees Wood Company, McKeesport, Pa. These furnaces are to supply two large Siemens heating furnaces and five sheet furnaces. In the sheet furnaces the gas is applied direct, not going through the generators, as in the Siemens furnaces, and it is said that this practice has given very satisfactory results.

It is reported on good authority that the plant of the Greensburg Steel Company, at Greensburg, Pa., which has been idle for about 18 months, has been leased by a party of capitalists and will be put in operation before the first of the year. The plant is a small one, containing a 12-pot steel melting furnace and two small hammers. It was designed to manufacture crucible steel for cutlery, edge tools, &c., under a peculiar process invented by A. C. Isaacs. The firm did not meet with the success they anticipated, and after running a few months the plant was closed down, and has been idle ever since.

The only rolling mill in Iowa is the establishment located at Burlington, formerly operated by the Iowa Rolling Mill Company. It is now owned and operated by the Holcomb-Brown Iron Company, who manufacture bar, band, agricultural and car iron. Two additional furnaces and a steam hammer are being built to meet the requirements of the local trade. Richard Brown is president, John G. Foote vice-president, John F. Holcomb secretary and treasurer, and H. G. Hamilton superintendent.

A charter has been granted to the Lloyd's Sons Company of Pittsburgh, with a capital stock of $200,000. The incorporators are Henry Lloyd, John W. Lloyd, Henry Balkan, Wm. F. Lloyd and Allen B. Wood. The new concern succeeds the old firm of H. Lloyd's Son & Company, proprietors of the Kensington Iron Works, in Pittsburgh, Pa.

The National Tube Works Company of New Jersey have been granted permission by the State of Pennsylvania to open a branch office in that State, the headquarters to be in McKeesport.

Quite a serious accident occurred on Saturday, the 19th inst., in the Bessemer converting department of the Homestead Steel Works of Carnegie, Phipps & Co., Limited, at Homestead, Pa. The men were engaged in removing the slag that had accumulated during the week in one of the converters, and during the operation a link in the chain supporting the ladle broke and the boiling metal was thrown over the workmen. Six men were very badly burned, and two of them have since died. The accident cannot be charged to carelessness, as it is one of those unforeseen things that is bound to occur in any large manufacturing establishment, notwithstanding that all proper care has been exercised by the employees.

For some years past the iron manufacturers at Youngstown, Ohio, have had under consideration at various times the advisability of erecting a Bessemer steel plant at that place, but nothing definite was ever done in regard to the matter. We can state, however, that the idea of building such a plant had not been abandoned altogether, but has not been agitated to any extent for some time. A gentleman who is largely interested in the manufacturing interests of Youngstown, Ohio, and is connected with one of the largest iron manufacturing firms in that place, states that just at present the steel plant enterprise is in *statu quo*. The rolling mill firms all acknowledge that the plant should be built, and that it will be eventually, but they are backward about subscribing financial support. He states that all the firms have valuable puddling mills, and they dread to lose them for the gain of a steel plant. It is the belief, however, that the project will ultimately be carried out, but it may be some time before such action is taken.

Mention has been made in these columns before of the entire destruction of the plant of the Youngstown Bridge Company, at Youngstown, Ohio. The company have made a satisfactory settlement with the insurance companies, and already operations have been commenced on the rebuilding of the works. The new plant will be considerably larger than the old one, and is expected to be in operation before the first of the year.

A favorable decision is looked for by the creditors of Brown, Bonnell & Co., Youngstown, Ohio, in the case brought by T. C. Crawford, counsel for Herbert C. Ayer, to set aside the sale and force a lien upon this extensive plant. It is claimed by Herbert C. Ayer that one of the appraisers was an employee of a creditor, and that the appraisal was too low. Evidence has been prepared by the creditors showing that there is no foundation for either of these claims. Counsel has been notified that a decision will be rendered some time during October next. This large iron plant has been in charge of Receiver Fayette Brown of Cleveland, Ohio, since February, 1883, and has been run without intermission, except when necessary to make repairs. Their interests have been carefully looked after by Receiver Brown, and the impression is general among the creditors that the net earnings in his hands will nearly pay their claims in full, aside from the accumulated interests. Under a recent order of court, the property has been sold to a committee acting as trustees for the creditors. Should a favorable decision be rendered by the Supreme Court, a company will be organized to operate the plant and Receiver Brown will file his final report.

The Bessemer Rolling Mills, at Bessemer, Ala., will be offered for sale on October 14. The mill has 24 puddling furnaces, a 20-inch muck, 22-inch sheet, 26-inch plate, 8-inch guide and 16-inch bar train.

The Tecumseh Furnace, at Tecumseh, Ala., will shortly go into blast. The furnace has been idle since the first of the year.

The report is current that the Gap Furnace and Rolling Mills at Hollidaysburg, Pa., which have been idle for some time, have been sold to a New York corporation, which will begin work at once.

The Victoria Iron Works, capitalized at $25,000, have been incorporated at Wichita Falls, Texas.

James M. Lancaster, the inventor of a direct process, has made a proposition to the Merchants' and Manufacturers' and Business Men's Association of Cumberland, Md., looking to the organization of the Cumberland Steel and Iron Company. This concern is to acquire the works of the Crown and Cumberland Steel Company. The capital of the company to be $200,000 in cumulative preferred 6 per cent. stock and common stock in equal proportions. Sixty thousand dollars 6 per cent. bonds will be issued and appropriated as follows: To pay off present liens, $40,000; payment on account of new steel plant, $10,000; for erecting new buildings for sub-companies, $10,000; total, $60,000; stock, $200,000; preferred 6 per cent., $100,000; to be sold for cash, $60,000; payment on account of direct steel plant, $30,000; to go into treasury of company, $10,000; total, $100,000; to secure possession for present plant and other bonuses, $74,000; to Lancaster Steel Company for reducing royalty and for services of James H. Lancaster for development of new company, $10,000; Josiah Holmes, as compensation for past services, $6000; bonus and commission payable pro rata to investors in the $60,000 cumulative preferred 6 per cent. stock needed for working capital of new company, $10,000; total, $100,000 common stock. The citizens of Cumberland are asked to raise $30,000.

Application has been made for a charter of incorporation for the Alliquippa Steel Company of Pittsburgh, Pa. The incorporators are B. Forst, J. S. Kaufman, Jno. T. McLaughlin, Jas. C. Russell and Jos. Kountz. The object of the proposed corporation is the manufacture of iron and steel, or both.

Machinery.

The McNaul Machine and Foundry Company of Ronceverte, W. Va., have completed their new works and they are now in operation. The new firm make a specialty of the manufacture of car wheels and mining machinery.

J. W. Morrison, Jr., of Youngstown, Ohio, and Samuel Luce of Boston have formed a partnership under the name of J. W. Morrison & Co., to engage in the foundry and machine business. They have already received several orders for sash weights and grate bars.

Byram & Co. of Detroit, manufacturers of the Colliau patent cupola furnace, recently made export shipments of their cupola furnace to Cardenas, Cuba, San Luis Potosi, Mexico, and Yokahama, Japan.

The M. Rumely Company, at La Porte, Ind., operate an important manufacturing enterprise of more than local note. They make a specialty of agricultural machinery, such as portable engines, threshing machines and separators, but having a large and well-equipped machine shop and foundry they are prepared to execute other work as required. The company's plant has steadily grown from year to year. They have just completed a large and substantial brick building as an addition to their machine shop and are adding quite an equipment of new tools.

At a meeting of the stockholders of the Union Switch and Signal Company of Pittsburgh, held at Swissvale, Pa., on Thursday, the 17th inst., it was decided by more than a three-fourths vote to ratify the sale of the property of this company situated on Garrison Alley, Pittsburgh, to the Westinghouse Electric and Mfg. Company. It was also decided that the Board of Directors should take action to secure the substitution of the lien of the company's mortgage on the Garrison Alley property to the property of the company at Swissvale, including such patent rights as the Union Switch and Signal Company have acquired or may acquire prior to such a substitution not already enumerated in the existing mortgage. During the meeting E. H. Goodman, general manager of the Union Switch and Signal Company, stated that their business, notwithstanding the general depression, was much better than had been expected and as their company expected to, and no doubt would share the railroad prosperity which must come this fall, there was no reason for apprehension of anything adverse in any direction. This view was coincided in by Geo. Westinghouse, president of the concern. Mr. Goodman stated that the gross earnings last year were $701,000, the net earnings $64,000, while the indebtedness had been reduced $83,000.

The annual meeting of the stockholders of the Webster, Camp & Lane Company was held last week in the offices of the company at Akron, Ohio. The following Board of Directors was elected: Jno. McGregor, S. H. Pitkin, J. W. Chamberlain, D. W. Thomas and W. A. Folger. Mr. Folger was elected to fill the vacancy caused by the death of Chas. Webster. After the stockholders' meeting the directors held their annual meeting and elected the following officers: Jno. McGregor, president; S. H. Pitkin, secretary and general manager, and J. W. Chamberlain, superintendent. No other matters of importance were acted upon by either directors or stockholders.

Owing to the retirement of A. T. Douthett from the Porter & Douthett Company, Limited, Allegheny, Pa., manufacturers of boilers and castings, the style of the firm has been changed to the Porter Foundry and Machine Company, Limited.

The A. K. Rarig Company at Buena Vista, Va., will, it is stated, re-equip their machine shops at a cost of $100,000.

The Erie City Iron Works at Erie, Pa., have started up their new machine shop, which will nearly double their engine capacity.

The Maumee Boiler Works at Toledo, Ohio, have been entirely destroyed by fire at a loss of $20,000, fully covered by insurance.

The Vulcan Iron Works at New Britain, Conn., have contracted with the H. Wales Company of Meriden for a new foundry, to be completed November 15. The building will be 278 x 70 feet, of brick, stone and iron, and will be equipped with two furnaces.

The Totten & Hogg Iron and Steel Foundry Company of Pittsburgh have within the last few days received an order from the San Diego Iron and Steel Company of San Diego, Cal., for one of their large improved squeezers. Also an order from Griswold Linseed Oil Company of Warren, Ohio, for ten large chill rolls, turned and complete with housings, bed plate, &c., for grinding flaxseed used in making oil. This firm are also filling orders from Pittsburgh, Scottdale, Towanda, Louisville and Minneapolis for rolls of all sizes and kinds.

Hardware.

Heidel Mfg. Company, St. Louis, manufacturers of Heidel's cold handle sad iron, report a very gratifying demand for this specialty. The special points they call attention to in this iron in addition to its being a cold handle iron, is its inability to get out of order, simple in construction and very durable.

St. Albans Foundry Company, St. Albans, Vt., advise us that their orders for general castings have increased to such an extent that they are now erecting an addition to their general foundry. Additional molders will be employed when this work has been completed.

The general passenger agent of the New York Central and Hudson River Railroad has contracted with Pratt & Letchworth of Buf-

falo for the manufacture of a large number of toy railway trains. The cars are to be made of pressed steel and the locomotives of malleable iron in *fac simile* of the passenger equipment of the railroad company, with the name of the road on each car and locomotive. The train complete will be 45 inches long.

The McCosh Iron and Steel Works, at Burlington, Iowa, are in full operation, double turn, manufacturing market wire, wire nails, barb wire, bolts and nuts and wagon hardware. Within the last six months the capacity of these works has been increased about one-third by the erection of new buildings and the introduction of new machinery. Further improvements are contemplated. The rapid development of the business of the company compelled an increase of the capital stock to $500,000 within the past year, and the prosperous condition of their trade justifies the wisdom of this expansion. The managers of these works are wide awake and very progressive, and in enlarging their plant have sought as far as possible to anticipate the requirements of their trade.

C. T. N. Engles, J. W. Forrest, T. L. Bird and others have incorporated the Electric File Renovating Company, Middleborough, Ky., to sell rights for the utilization of the electric process of renovating files, establish factory, &c. The capital stock is $16,000.

The American Nut Lock Company, St. Louis, Mo., are enlarging their plant so as to double their capacity. They will turn out 30,000 nut locks daily. The company expect to use oil for fuel under their furnaces, and are now negotiating with several leading oil fuel burner companies to that end.

The Cleveland Hardware Company, Cleveland, Ohio, are completing and will soon occupy one of the best-appointed plants for the manufacture of wrought wagon hardware in the country. The factory proper, 80 x 210 feet, constructed wholly of brick and iron, and as nearly fire proof as it can possibly be made, will contain the special and miscellaneous machinery used in the manufacture of the company's goods. The rolling mill is 60 x 330 feet, with an L 115 x 100 feet, and is equipped with a 10-inch train of rolls, which is operated by a new 500 horse-power engine. In addition, they have put in a patent cooling bed that will enable them to furnish steel tire perfectly straight. They have also in the course of erection a blacksmith shop, 80 x 120 feet, which is to be iron with a slate roof. The managers state that it is their intention to make this department as complete as the most modern machinery they can purchase will permit them. The power house is 60 x 76 feet, and will contain a battery of five boilers, with a capacity of 1000 horse-power; two engines for furnishing power to the blacksmith shop and factory, and the dynamo and engine for lighting the plant. All the buildings are constructed as nearly fire proof as possible. The fire of June 6, which destroyed their factory and rolling mill, left untouched their large brick warehouse, 50 x 250 feet, which was filled with a large stock of finished goods. Since that time, by operating night and day in some temporary buildings, and drawing on their reserve stock, they have been enabled to meet the large demand for their goods without delay.

The Ludlow-Saylor Wire Company, St. Louis, Mo., are referred to as having handled an exceptionally large quantity of barb wire during the year 1890-91, and advise us that with their increased facilities they are in a position to ship promptly on receipt of orders. They are very busy in their art metal department and have recently completed several very handsomely designed grilles for residences in St. Louis.

Curtis & Co. Mfg. Company, St. Louis, Mo., manufacturers of saws and saw mill machinery, have removed from 817 North Second street to more commodious quarters at Twenty-Second street and Washington avenue, formerly occupied by the Lindell Railway Company In their new location they will be in better position to handle their rapidly increasing trade, as their facilities for storing and shipping are more than doubled.

The H. P. Nail Company of Cleveland have completed a very fine galvanizing plant, and are now manufacturing plain and galvanized fence wire in addition to their extensive wire nail and brad business.

Miscellaneous.

The Pittsburgh Reduction Company of Pittsburgh, manufacturers of pure aluminum, have quite an interesting display of that material in the exhibition now being given by the Pittsburgh Exposition Society. Cooking utensils, one of the most important purposes for which this metal is adapted, are shown in several shapes. Very many forms of stamping goods are also to be seen, as well as composing sticks, rules, spoons, forks, &c, in many different styles. The company have also a molder who makes castings of the metal from a small aluminum jacketed furnace, which is attracting considerable attention, the object of the firm being to show that aluminum can be cast as readily into all shapes as any other metal.

The Pocantico Hills Aluminum Company of Westchester County, N. Y., have been organized, with Grosvenor P. Lowrey as an active co-operator.

The Whitman Mfg. Company of St. Louis manufacturers of baling presses, all sizes and styles, farm machinery, &c., report their trade as being very large. They have increased their extensive works at every point possible, and in addition have leased the Excelsior Foundry near them, and are running that to its full capacity. The home demand from all sections is good, and foreign trade steadily increasing; consider the future prospects very promising.

The National Tube Works Company of McKeesport, Pa., who last fall began equipping their large plant with Ridgway steam hydraulic cranes, are continuing to introduce them, their latest order being for 5-ton cranes. They have just started three 4-ton cranes of this style.

The Secretary of State of Illinois issued licenses to-day to the following: Chicago Bicycle Company, at Chicago, to manufacture bicycles and sporting goods; capital stock, $250,000; incorporators, L. J. Pierson, Hugh McIndoe, R. M. Dean. Park Tower Company, at Chicago, to construct one or more towers in Chicago similar to the Eiffel Tower in Paris; capital stock, $200,000; incorporators, M. M. Jamiesen, G. A. Jacob, William Douglas. Madison Roofing Company, at Chicago, to manufacture roofing material; capital stock, $200,000; incorporators, W. McDonald, W. J. Howe, H. C. Williams. Humber & Co., Limited, at Chicago, to manufacture cycles; capital stock, $100,000; incorporators, Horace Bell, G. J. Barrett, W. C. Thorne. Humber Cycle Importing Company, at Chicago, same object, capital and incorporators. The Aluminum Mining and Smelting Company, Chicago, capital stock $1,000,000; incorporators, Freeman Lane, Lincoln D. Ovitt and Marvin H. Walker.

On the 12th inst., at Quincy, Ill., G. Watson French closed a deal by which the Quincy Metal Wheel Works becomes the property of a combination consisting of the Eagle Mfg. Company and the Deffendorff Metal Wheel Works, both of Davenport, Iowa. The works will shortly be moved to Davenport.

Among the recent orders booked by the Gilbert & Bennett Mfg. Company, No. 148 Lake street, Chicago, is one for G. & B. wire lathing, with Hammond's metal furring, for the John M. Smyth Building on West Madison street, Chicago. This contract includes all the lathing that will be used in the building, which is thoroughly fire proof, eight stories high, and is erected on the site of Smyth's Building, destroyed by fire last spring.

The Madison Car Company of Madison, Ill., report to us that their new plant will be in full operation next week, and will work upon the following contracts, which have been recently secured: 300 40-foot 30-ton furniture cars for the Madison Belt Railroad; 25 barrel-rack cars for the Standard Oil Company; 1000 34-foot 30-ton box cars for the C., B. and Q. R. R., and 500 34-foot 30-ton box cars for the Savannah, Florida and Western Railroad.

Among the latest to adopt the Ridgway hydraulic system of cranes is the Reading Iron Company, Reading, Pa., who operate one of the most extensive plants in the country. They have built a large addition to one of their sheet mills, and the whole floor space will be covered by Ridgway cranes. Dennison weighers will be attached to the cranes, and one man will weigh and load the entire product of the large mill.

Lukens Iron and Steel Company, Coatesville, Pa., who have the largest plate mill in the United States, have just finished a gas making plant, which was tried on 17th inst. and found very satisfactory. This company are now erecting two open-hearth furnaces south of their present mill. The puddle mill has been closed and will be turned into a light sheet mill and the manufacture of iron entirely abandoned by this firm.

The Standard Smoke Consumer Company have been organized at Portland, Maine, for the purpose of manufacturing and dealing in machinery and apparatus relating to smoke prevention, steam, steam-draft combustion furnaces, &c. The capital stock is $150,000.

At Williamsport, Pa., $100,000 has been subscribed for the purpose of securing the works of the Backus Portable Steam Heater Company, now located at Philadelphia.

After October 1 the Rome Iron Works, Rome, N. Y., will be known as the Rome Brass and Copper Company, a certificate to that effect having been filed with the Secretary of State.

Although Wallace & Sons, the well known brass manufacturing firm of Ansonia, Ct., completed a new plant last year, it has been found necessary at this early date, owing to increased business, to enlarge their rod rolling mill. The mill, when completed, will be one of the best appointed rod rolling mills in the country.

New Compound Locomotive.

A new form of compound locomotive, designed by F. W. Johnstone, superintendent of motive power of the Mexican Central Railroad, has been built by the Rhode Island Locomotive Works. The compounding is done on the four cylinder system, but the high-pressure cylinder on each side is placed inside the low-pressure cylinder, the latter being in consequence an annular chamber with a piston in the form of a flat ring. A small annular chamber separates the two cylinders. Steam is admitted to and exhausted from the high-pressure cylinder through ports or passages at the ends. The cylinders are 14 x 24 inches and 30¾ x 24 inches, the latter being equal (after deducting the area of the high-pressure cylinder and surrounding sleeve) to a cylinder 24½ x 24 inches. The cylinder ratio is three to one. The length of the fire box is increased to 9 feet 4 inches. The slide valve is a very important feature in this design, and is so constructed as to distribute steam to the high and low pressure cylinders, requiring but one valve stem, which is actuated by a link motion in the usual way. The valve is made in two sections, the outer portion distributing steam to the high-pressure cylinder and the inner section to the low-pressure cylinder. The inner section is carried by the outer and has a travel of 4⅜ inches, while the travel of the outer section is 5½ inches. The objects of this are to retard the point of cut off to the low-pressure cylinder and to reduce the compression on the front of the high-pressure piston. It is stated that these engines effect a saving of 25 per cent., an important item in a country like Mexico where coal is so costly.

PERSONAL.

W. F. Durfee has accepted the position of general superintendent of the works of the C. W. Hunt Company, at West New Brighton, Staten Island.

V. T. Palmer, president of the Palmers & DeMooy Foundry Company of Cleveland, returned last week on the steamer City of Paris from an extensive trip through Europe.

F. N. Hoffstot of the Clinton Iron and Steel Company of Pittsburgh, Pa., who has been abroad for about three months on a pleasure trip, is expected home about October 1 next. During his absence abroad Mr. Hoffstot was a guest for a time of Henry Phipps, his brother-in-law, who is sojourning in London.

An interesting and somewhat breezy article on explosives is printed in the last issue of the "Proceedings" of the United States Naval Institute. It is by Stephen H. Emmens, the well-known inventor of Emmensite.

The Wilmot & Hobbs Mfg. Company of Bridgeport, Conn., manufacturers of cold-rolled strip steel and stamped work, are about to distribute a steel foot rule bearing on its back equivalents in decimals of an inch of different gauges.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., September 22, 1891.

Pig Iron.—It is curious that for several weeks past we have had to report an improving market, and yet up to this date there is no quotable advance in prices. Prices are higher, nevertheless, but so far it is of a negative character—that is, consumers cannot secure concessions as they did a little while back. There is also a stronger buying movement, so that the market is distinctly in sellers' favor, although it has hardly reached a point at which a clean advance is asked. The volume of business is very large, however, and is steadily increasing, but the fact of new furnaces being about ready to "blow in" tends to repress any immediate enthusiasm in regard to prices. And besides this, Western markets are reported to be a little sluggish, so that it is felt to be good policy to make haste slowly. Meanwhile, however, makers are not entering orders indiscriminately. One representative house informed the writer that they would be more inclined to shade for next week's delivery than for next month, that they would ask a little advance for November and December, and that for later dates they would decline quoting at all until the season was further advanced. This doubtless fairly represents the general feeling among sellers. On the other hand, buyers are duplicating previous transactions when they have the opportunity, and in many cases are securing options on best terms available. There is undoubtedly a very heavy business in sight, and while prices may not advance immediately, it is pretty safe to say that whatever changes are made will be toward a higher level. Many large consumers are getting back to their old methods—that is, putting a limit on price, rather than on quantity. Last week's business was larger than usual, but appearances indicate a still heavier demand during the next few days. Sales have been made at prices about as follows, varying according to brand, point of delivery, &c.:

Ohio Softeners, No. 1x	$19.00	@	.....
Ohio Softeners, No. 2x	18.00	@	.....
Standard Penna, No. 1x	17.75	@	$18.00
Standard Penna, No. 2x	16.25	@	16.75
Medium Penna No. 1x	17.25	@	17.50
Medium Penna, No. 2x	16.00	@	16.25
Virginia, No. 1x	16.50	@	17.25
Virginia, No. 2x	15.50	@	16.00
Standard Neutral All-Ore Forge	14.25	@	14.75
Ordinary Forge Cinder mixed	13.75	@	14.00
Hot-Blast Charcoal	20.00	@	22.00
Cold-Blast Charcoal	24.00	@	27.00

Bessemer Pig.—Prices are almost nominal, although there is a better outlook for business than for some time past. Standard brands nominally $16.50 @ $17 at furnace, and low phosphorus from $18 50 up.

Ferromanganese.—Held at $64.50 for 80 %, duty paid. Buyers at $63.50 @ $64.

Steel Billets.—The market is feverish, and prices somewhat unsettled. Sales have been made recently at about $27, Harrisburg, and from that up to $27.50 at seaboard. For immediate deliveries similar figures would probably be accepted, but 25¢ or 50¢ more is asked for shipments during the three last months of the year, and still higher figures for later dates.

Steel Rails.—There is more inquiry for Rails, and prospects are brightening in every direction. Orders are readily taken at $30, at mills, for winter deliveries, but for spring and later manufacturers do a great deal of thinking before giving options at that figure, although of course quantity, terms of settlement, &c., have more or less influence in deciding the question.

Muck Bars.—Market as dull as ever. A few small lots of a choice make have been taken at $27, delivered, while others are offering 6-inch bars at $26.50 @ $26.75 without finding a buyer.

Bar Iron.—Prices are no better, but there is a much stronger demand. In some cases options have been asked on large lots at current prices, accompanied by firm offers at 2½¢ @ 5¢ less, but manufacturers prefer taking their chances sooner than deviate from ruling prices with reasonably prompt deliveries. There are no specially large orders from consumers, although car builders are expected to be in the market pretty soon. Some large orders for cars have been placed by Western roads, but they were taken by shops in their own vicinity, so that builders in the East are comparatively dull for the time being. Prices vary from 1.70¢ to 1.75¢ for city deliveries, and 1.60¢ to 1.65¢ at interior points. In some cases lower figures have been named for what were considered specially desirable orders.

Skelp Iron.—Not much doing; quotations about 1.70¢ @ 1.75¢, delivered, for Grooved, and 1.90¢ for Sheared.

Plates.—Business is moderately active, but not sufficiently so to influence prices. Mills are doing fairly well, but none have more than a month or six weeks' work on hand, while some are running still closer to the end of their order books. The general outlook is favorable, but there is nothing in sight likely to cause any immediate change in prices, which remain about as last quoted, viz:

	Iron.	Steel.
Tank Plates	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box	4.00 @ 4.25¢	3.00 @ 3.50¢

Shaped Material.—Mills are pretty well employed on orders taken some time ago, but there is nothing new on the market of much importance. A few lots of material for architectural purposes are being called for, and something for bridge work, but taking everything into consideration, there is not the amount of business that has been generally looked for. Prices are about as last quoted—viz., for deliveries in consumers' yards: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.05¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—The demand is quite active, and mills have about all the business they can handle. Prices ought to be a little better, but in the meantime there is no change, and best makes are available at about the following prices:

Best Refined, Nos. 14 to 20	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24	3.10¢ @ .....
Best Refined, Nos. 25 to 26	3.20¢ @ 3.30¢
Best Refined, No. 27	3.40¢ @ .....
Best Refined, No. 28	3.50¢ @ .....
Common, ¼¢ less than the above.	
Best Soft Steel, Nos. 14 to 20	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24	3⅓¢ @ ....
Best Soft Steel, Nos. 25 to 26	4¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....
Best Bloom Sheets, ¼¢ extra over the above prices.	
Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material.—There is no quotable change in prices, but there is a better demand and buyers more disposed to increase their holding. Anything strictly first class commands full prices, while mixed and inferior lots have to be marked down to low figures to command attention. General quotations are about as follows: Iron Rails, $21.50 @ $22.50; Steel Rails, $17 @ $18, delivered. No. 1 Railroad Scrap, $20 @ $21, Philadelphia, or for deliveries at mills in the interior $21 @ $21.50, according to distance and quality; $15 @ $16 for No. 2 Light; $14 @ $15 for best Machinery Scrap; $13 @ $14 for ordinary; $14.50 @ $15.50 for Wrought Turnings; $9 @ $10 for Cast Borings, and nominally $24 @ $25 for Old Fish Plates, and $16 @ $17, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—The same unsatisfactory reports are met with, and cuts of 5 % and upward are not infrequent when desirable business is within reach. Nominal discounts are as follows, but they are not strictly adhered to:

Butt-Welded Black	52½ %
Butt-Welded Galvanized	42½ %
Lap-Welded Black	62½ %
Lap-Welded Galvanized	50 %
Boiler Tubes, 2½ inch and under	52½ %
Boiler Tubes, 3 to 6 inch	60 %
Boiler Tubes, 7 inch and larger	55 %

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, September 22, 1891.

Pig Iron.—There is an increasing demand, with buyers more disposed to buy and sellers less anxious to sell, and while prices remain unchanged as compared with those of a week ago, the market is firmer. While consumers are still able to buy for immediate or near-by delivery at current rates, furnacemen generally are not inclined to contract ahead, as they desire to keep themselves in a position so that they can take advantage of an improvement should one occur, and some are very confident that considerably higher prices will obtain within the next few weeks. Consumers are nearly all willing to contract for future delivery at present prices, which we quote as follows:

Neutral Gray Forge	$13.75	@ $14.00,	cash.
White and Mottled	13.00	@ 13.50,	"
All-Ore Mill	14.50	@ 15.00,	"
No. 1 Foundry	16.50	@ 17.00,	"
No. 2 Foundry	15.50	@ 16 00,	"
No. 3 Foundry	14.50	@ 15.00,	"
Cold-Blast Charcoal	25.50	@ 27 00,	"
No. 2 Charcoal Foundry	20.50	@ 21.00,	"
Bessemer Iron	15 50	@ 15 75,	"

The only sale of Bessemer reported the past week of any importance was a lot of 3500 tons at $15.60, cash. Forge Iron is steady at $14, cash, for well-known brands, and the great proportion of that being consumed here is the product of city furnaces.

Muck Bar.—There appears to be an increasing demand, but little or no change in prices. Most of the business reported is at $26.50, cash, although there was one sale at $26.25. Those mills making a specialty of working on Muck to sell, aver that the margin at present prices is very small. Some of the brokers here are making a business of Muck Bar—that is, they furnish the mill with the Pig Iron and pay so much per ton for having it converted into Muck.

Manufactured Iron.—Orders for all kinds of Finished Iron continue to come forward quite freely, and the mills not only here but in the Wheeling and Mahoning and Shenango Valley districts have all they can do, and some of them considerably more. Prices firmer, but without quotable change; mill owners would like to have an advance, and if the demand keeps up much longer as it is at present higher prices will no doubt obtain; buyers are anxious, therefore, to get their orders placed as soon as possible. We repeat former quotations: Bars, 1.70¢ @ 1.75¢; Plate and Tank, 2.05¢ @ 2.10¢; No. 24 Sheet 2.75¢, all 60 days, 2 % off for cash. Skelp Iron is still quoted at 1.70¢ @ 1.75¢ for Grooved and 1.90¢ for Sheared, four months, 2 % off for cash. Continued liberal shipments southward of Cotton Ties are being made.

Nails.—There has been more inquiry for Cut Nails the past week, and advices from the Wheeling district report a considerably firmer feeling on the part of

manufacturers, and while we make no change in our quotations it is probable that higher prices will obtain in the near future. Production is now and has been for some time past exceedingly small, while the demand is increasing, and it is well known that there is little or no margin for profit at quotations—$1.55 @ $1.60 for 30¢ to 35¢ average, 60 days, 2 % off for cash, f.o.b. at factory. There is some inquiry for Wire Nails, but no imprrovement in prices. While manufacturers continue to quote at $1.90, 60 days, 2 % off for cash, and are refusing to contract for future delivery at the price quoted, desirable orders for immediate or near-by delivery can still be placed at $1.85. So far as the manufacturer is concerned the Wire Nail trade is now about as bad as that of the Cut Nail, and manufacturers of the latter are taking considerable comfort out of this.

Wrought-Iron Pipe.—There has been an increased inquiry the past week, which is owing to an apprehension on the part of buyers that prices may be advanced, and they are anxious to have their orders placed as soon as possible. While we continue to quote the regular syndicate prices, it is well known that they are being cut more or less, and if, as claimed, there is no margin for profit at present prices, there is reason to look for an advance in the near future. Following are the rates as quoted by the Manufacturers' Association: Discount on Black Butt Pipe, 52½ %; on Galvanized, do., 42½ %; on Black Lap, 62½ %; on Galvanized do., 50 %; Boiler Tubes, up to 2¼-inch inclusive, 55 %; 3 to 6 inch, 60 %; 7-inch and larger, 55 %; Casing, all sizes, 55 %.

Structural Material.—There is no abatement in the activity which has characterized this line of business for some time past; those mills making a specialty of the same are very busy, as is nearly always the case at this season of the year. Prices firm, but unchanged. Channels and Beams, 3.10¢; Sheared Steel Bridge Plates, 2.15¢ @ 2 20¢; Angles, 2¢; Tees, 2.60¢; Universal Mill Plates, Iron, 2.05¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates.—Manufacturers continue to report business as being dull, but they are hopeful of an improvement as the season becomes more advanced. Prices remain unchanged, as follows: Fire Box, 3.90¢ @ 4.25¢; Tank, 2.05¢ @ 2.10¢; Shell, 2.35¢; Flange, 2.55¢.

Merchant Steel.—There is an improved demand reported, but prices remain unchanged, as follows: Crucible Tool Steel, 6½¢ @ 9¢; do. Spring Steel, 4¢; do. Machinery, 4½¢ @ 5¢; Bessemer Machinery, 2.30¢ @ 2.40¢; do. Toe Calk, 2.40¢ @ 2.50¢; Tire Steel, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢.

Barb Wire.—There is only a moderate business, but it is expected to improve later on in the season. Prices remain unchanged. Painted, in car lots, $2.70; less than a carload, $2.75; Galvanized, $3.25 in car lots and $3.30 for less, f.o.b. at factory. It is said that one firm in the syndicate either has or is about to withdraw from the same, and then a new firm is about ready to start up, but whether it will go into the syndicate or not does not appear to be known at present.

Old Rails.—There is continued inquiry for Iron Rails, with but few offering, and prices are firm but unchanged; we are advised of a sale of 700 tons for delivery in the Mahoning Valley at $23.75 There are no consumers in Pittsburgh. Old Steel Rails continue neglected, and may be quoted nominally, in the absence of sales, at $17 @ $17.50.

Wire Rods.—There appears to be some inquiry, and we can report a sale of 800 tons at $35, spot cash, f.o.b. at maker's mill. Two of the three mills here are using all they can make and the third one is also a consumer, but now and again makes a sale. The local market therefore may be quoted steady at $35, with a rumor that there is a buyer on the market for a lot of 10,000 tons.

Billets and Slabs.—There is continued inquiry and a large volume of business, but no improvement in prices. Nearly all the business reported for some weeks past has been at $25, cash, at makers' mill. The mills generally are pretty well sold ahead, and some of them are indifferent about making additional contracts at present prices, which, it is well known, afford a very small margin for profit.

Steel Rails.—Orders continue to come forward quite freely, and while the market is firmer, the price remains unchanged at $30, f.o.b. mill.

Railway Track Supplies.—There is an active market, and it is difficult to place orders for immediate or even near-by delivery, as the mills are all more or less sold ahead. Spikes are still quoted at 2 15¢ @ 2.20¢, f.o.b at makers' works; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Ferromanganese.—The local market is firm at $66.50, cash, for 80 % domestic.

Old Material.—There is a fair business, but prices remain about as last quoted. Sales No. 1 Railroad Wrought at $19 @ $19 50, net ton; Cast Scrap, $13.50, gross; Rail and Bloom Ends, $17 @ $17.50, gross; Leaf Spring Steel, $20 @ $20.50.

Coke.—There is a continued steady demand. Prices unchanged.

(*By Telegraph.*)

The Gautier Steel department of the Cambria Iron Company, Johnstown, Pa., have just completed a large warehouse, new 10-inch merchant mill, rake teeth shop and finger bar shop, and are now in better shape than ever before to supply the trade with all their lines. All departments are running to their fullest capacity, orders having been booked to keep the mills busy for months ahead.

Sapery & Muscat, brokers and dealers in Scrap Iron, Steel and Metals, have recently opened an office in Room 609, Hamilton Building, Pittsburgh, Pa. This firm also have offices in Syracuse, N Y., and Scranton, Pa.

Cincinnati.

(*By Telegraph.*)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, September 23, 1891.

There has been some increase in the volume of business during the week, and while there is no quotable advance in prices it is evident that the quotations can be no longer shaded. Even a fractional concession is exceptional. On the other hand, the claim that an advance has been obtained does not bear investigation. The sales for the week which can be traced aggregate upward of 30,000 tons, something over one-fourth of which were Southern Charcoal Car Wheel Iron, about one-half Gray Forge and Neutral Coke and the remainder No. 2 and No. 3 Foundry and Ohio soft, all on the basis of quotations. Further orders have been placed by the railroads for new cars, and much of the Iron was to cover the Iron contracts. The repair shops are generally working full handed, and the smaller foundries are, in the aggregate, melting more Iron than they have done for a long time. Many of the Southern furnaces have all the orders booked that they care to take at current prices, but there is little if any difficulty in obtaining all the Iron that is required for delivery this year, but there is a general indifference or a positive refusal to extend deliveries into next year, for it is believed that the railroads will be in a position long before that time to command much needed increase in equipments. The Iron Pipe works are not yet materially increasing their melting of Iron, but the indications are favorable for an enlargement. The money market is steadily becoming easy, and collections, as a rule, are satisfactory. Quotations are unchanged, as follows:

Foundry.	
Southern Coke, No. 1	$14.75 @ $15.00
Southern Coke, No. 2	13.50 @ 13 75
Southern Coke, No. 3	13.00 @ 13 25
Ohio Soft Stone Coal, No. 1	16.50 @ 17.00
Ohio Soft Stone Coal, No. 2	15.50 @ 16.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	20.00 @ 21.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.00 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.00 @ 16.00
Forge.	
Gray Forge	12.50 @ 12.75
Mottled Neutral Coke	12.00 @ 12.25
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	19.25 @ 19.75
Hanging Rock, Cold Blast	25.00 @ 26.00
Lake Superior Car Wheel and Malleable	18.00 @ 18.50

Chicago.

(*By Telegraph.*)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, September 23, 1891.

Generally speaking, business is in a satisfactory condition, but it is not showing the improvement which the prospects of the past two months seemed to warrant. It is true that nobody complains of dullness, but at the same time there are few who find themselves moving under high pressure. Pig Iron is more active, but Manufactured Iron is comparatively quiet, and if the mills were not busy on old orders there would be a weakening in prices. Even now there are rumors of cutting, which would seem to be wholly unnecessary, with the certainty of prosperous times immediately ahead. The hot weather of the past week has assured a heavy corn crop, which was the last thing needed to put the agricultural interests in first-class condition. Manufacturers who at this time are selling their product far ahead without covering for their raw material are taking great risks.

Pig Iron.—The demand for Coke Iron is quite active. No large lots of local Iron have been placed lately, the heaviest order reported being for 1000 tons, but small deals are very numerous. Indications point to heavy transactions at an early day. Southern Coke is in the same condition. Business has been fairly good and contracts are pending for lots ranging from 1000 to 3000 tons. With all this activity, however, prices are not higher, and they will probably continue at their present level until the volume of business becomes considerably greater. Orders for Lake Superior Charcoal have been small, but consumers are making inquiries on round lots. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal	$17.50 @ $18.00
Local Coke Foundry, No. 1	15.50 @ 16.00
Local Coke Foundry, No. 2	15.00 @ 15.25
Local Coke Foundry, No. 3	14.50 @ 15.00
Local Scotch	16.00 @ 16.50
Ohio Strong Softeners	17.75 @ 18.25
Southern Coke, No. 1	15 75 @ 16 25
Southern Coke, No. 2	15.00 @ 15.25
Southern Coke, No. 3	14.50 @ 15.00
Southern, No. 1, Soft	15.00 @ 15.75
Southern, No. 2, Soft	14.50 @ 14.75
Southern Gray Forge	14.00 @ ....
Southern Mottled	13.50 @ 14.00
Tennessee Charcoal, No 1	18.00 @ ....
Alabama Car Wheel	20.50 @ 21.50
Coke Bessemer	.... @ ....
Hocking Valley, No. 1	17.00 @ 18.50
Jackson County Silvery	17.50 @ 18.00

Small sales of Spiegel have been made at former quotations.

Bar Iron.—Inquiries for small lots have been fairly numerous, but large orders are rare. A sale of 1000 tons or more of Car Iron for winter delivery is reported, but outside of that nothing of importance has transpired. The market is not up to expectations, either in volume of business or strength of prices. The manufacturers who quote 1.75¢ @ 1.80¢, Chicago, are not being favored with much work just now, as others are evidently more closely meeting the views of buyers.

Structural Iron.—Contracts for new buildings are now getting scarce with the flight of summer, and sales of Beams are falling off. Bridge work is not very promising, as there are but few orders in sight. A good order for this class of material for the World's Fair buildings was placed. Mill shipments of Angles are quoted at 2.05¢ @ 2.10¢, Chicago.

Plates.—The week was a very active period with most of the leading sellers. A great many mill orders were taken, some running up to several hundred tons. Prices at mill are a little firmer, and the figures made 30 days since cannot be duplicated. Tank Steel is quoted at 2.10¢ @ 2.20¢, Chicago. Store prices are as yet unchanged, but with the improved condition of the mills and the very heavy demand from all classes of consumers, an early advance is expected.

Sheets.—Black Sheets are rather quiet and will probably continue so until cooler weather. The heavy demand for Galvanized Iron continues, and agents report all the business they can conveniently handle, but prices are unchanged.

Merchant Steel.—A better demand is reported from every quarter. Tool Steel is quite active, and cheap Steel is also moving well, surpassing expectations. The prominent makers of Agricultural Steel are talking of advancing prices, and prefer entering small orders at present to taking large ones. We make no change from last week's prices.

Track Supplies.—The Steel Rail trade has undergone no special change. Orders are for small lots running up to 3000 or 4000 tons, but they keep coming in so regularly that work seems to be assured for the local mills at least up to the beginning of winter. Manufacturers think prices will run as they are—say $31.50 @ $33—for winter delivery, but from March on they will be higher. Splice Bars are quoted at 1.85¢; Spikes, 2.20¢ @ 2.25¢; Track Bolts with Hexagon Nuts 2.75¢ @ 2.80¢.

Old Rails and Wheels.—The market for Old Iron Rails appears a little weaker, and $23.25 can barely be obtained for them. If any transactions have occurred they have been kept very quiet. Old Steel Rails are nominally worth $15 @ $16. Old Car Wheels are in demand at $16, but holders ask more.

Scrap.—Dealers are somewhat encouraged by the renewed inquiry from consumers. All want to buy at lowest prices, but if they need material it will not take long to come to an agreement on terms. Dealers' selling prices are unchanged. We quote as follows, per net ton: No. 1 Railroad Forge, $19 @ $19.25; No. 1 Forge, $18.50; No. 1 Mill, $14 @ $14.50; Fish Plates, $23.75; Car Axles, $23.50; Light Iron, $9; Machinery Cast, $12.50; Stove Plate, $8.50; Cast Borings, $8; Wrought Turnings, $10; Axle Turnings, $12.50; Mixed Steel, $11; Coil Steel, $15; Leaf Steel, $16; Tires, $15.50.

Metals.—Carloads lots of Lake Copper are quoted at 12¼¢. Casting brands, 12¢ @ 12¼¢. It is reported here that the Anaconda Mine will soon be working again, as an understanding has been reached between the mining company and railroad with regard to freight rates. Prime Western Spelter is still quoted 4.85¢ @ 4.95¢. In Pig Lead prices have remained very steady all the week, and some 1000 tons have sold at and around 4.30¢ @ 4.35¢, according to brand and delivery. Inquiries have been fair, but not numerous enough to advance values.

Cleveland.

CLEVELAND, September 21, 1891.

Iron Ore.—Sales of new Ore have been limited this month, although it is conceded that several hundred thousand tons must still be engaged before the season closes. During the past seven days about 225,000 tons of new Oore have been unloaded at lower lake ports, as compared with 175,000 tons in the corresponding week of 1890. Shipments to the furnaces have correspondingly increased. Furnacemen are keeping themselves informed as to the condition of the market, but are making few demands. Ore freights continue at $1 from Escanaba, $1.15 from Marquette and $1.25 from Ashland and Two Harbors. Never before have such remarkable efforts been made to get the Ore down from the mines. Even should the supplemental sales reach 1,000,000 tons—and this is not impossible—the entire output for the year is likely to be on the docks before the regular navigation season closes. Sales of a few thousand tons of non-Bessemers have been made on the basis of $3.75, f.o.b. cars Cleveland; and also of Gogebic Bessemers at $4.75 @ $5.

Pig Iron.—There been no material change in the situation beyond a firmer feeling as to the future. Furnacemen are not allowing stocks to accumulate, and are only attempting to fill the orders placed a month or two ago. Dealers steadily decline to book large orders for future delivery at present quotations. Consumption is remarkably heavy, and everything seems to justify the hopeful feeling just now prevailing. Local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	$18.50 @ $19.00
Nos. 1, 2 and 3 Bessemer, per ton.	16.00 @ 16.25
No. 1 Strong Foundry, per ton..	16.25 @ 16.75
No. 2 Strong Foundry, per ton..	15.25 @ 15 75
No. 1 American Scotch, per ton.	16.80 @ 17.00
No. 2 American Scotch, per ton.	15.80 @ 16 85
No. 1 Soft Silvery, per ton.....	16.50 @ 17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	14.00 @ 14.50
Mahoning and Shenango Valley Red Short Mills, per ton.....	14.00 @ 14.50

Nails.—Excellent demand for Wire Nails at $2. Cut Nails are something of a drug at $1.70 and dealers are making a united effort to unload their present stock.

Old Rails.—Market has brightened up a little during the last week. Large quantities of Old Americans are being offered at $23 @ $25.

Manufactured Iron.—A very good demand for Bar Iron is reported, but several mills are practically sold up to January 1, 1892, on the basis of 1.65¢ and have nothing to offer. Structural Iron continues a favorate.

The Emma Furnace is again in blast. A new jacket is being built. The furnace is doing good business.

Louisville.

LOUISVILLE, KY., September 21, 1891.

Pig Iron.—The market is active without any advance and buying in some sections of the country is heavy, this especially applying at tidewater. In the West consumers are yet purchasing but moderate quantities, neither they nor producers are anxious for much business running into next year. The large productive capacity of the country convinces those buying that prices cannot advance very much; on the other hand, those that believe there will be a sharp increase in prices point to the fact that notwithstanding the large production, the consumption at the present moment is practically equal to it, and this in the face of little railroad buying. It is felt, however, that the crops are so large that railroads will be unusually heavy consumers of Iron this fall and next year, and that such a large factor coming on to the market would increase prices at which Iron can be sold. Among Car Wheel Irons, prices yet remain below what many furnaces say is cost; and though Irons are offered at a positive loss, consumers are careful in placing orders unless they have contracts to protect them. Old Car Wheels are in greater demand, and are held for higher prices, and sales can be made at nearly $2 a ton over what same were bought at recently. We quote for cash, cars Louisville:

Southern Coke, No. 1 Foundry...	$14.50 @ $15.00
Southern Coke, No. 2 Foundry...	13.75 @ 14.25
Southern Coke, No. 3 Foundry....	13.25 @ 13.75
Southern Coke, Gray Forge.....	12.75 @ 13.25
Southern Charcoal, No. 1 Foundry	16.00 @ 17.00
Southern Car Wheel, St'nd br'nds	18.50 @ 20.00

Detroit.

WILLIAM F. JARVIS & CO., Detroit, Mich., under date September 21, 1891, say: There has been a decidedly improved condition in nearly all branches of the Iron trade. Prices cannot yet be reported to have advanced, but there is a marked firmness, which is all the more noticeable after the long period of weak and lowering prices. In volume, the general trade in Pig Iron is much larger, many good-sized orders having been placed for prompt and near future delivery at full figures. Railroad material has been freely bought, and much greater activity is seen in this line. Lake Superior Charcoal has been sought chiefly by Car Wheel makers, and general trades of round lots have been consummated, and several inquiries still remain unsatisfied which should be closed during the coming week. With a very much better feeling we report the market as follows:

Lake Superior Charcoal, all numbers.....	$18.00 @ $18.70
Lake Superior Coke, Bessemer...	17.75 @ 18.50
Ohio Blackband (40 per cent.)...	18.00 @ 18.50
Lake Superior Coke Foundry, all ore.....	17.50 @ 18.00
Southern No. 1.....	16.25 @ 16.50
Southern Gray Forge.....	14.00 @ 14.50
Jackson County (Ohio) Silvery.	18.00 @ 18.50

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, September 21, 1891.

Pig Iron.—The past week has shown considerable activity. Sales aggregating nearly 10,000 tons have been made at prices that are reported to be on the basis of those quoted below. This increased business is, no doubt, only the beginning of a lively fall trade, and furnaces are even now considering the advisability of advancing prices. The outlook is very encouraging, and unless trade takes an unexpected turn higher prices are more than likely to prevail. Of course there are still a few odd lots that are being offered at inside prices, but these are as a rule Irons that in quality are below the average, and cannot be placed in competition with first-class Irons. It is not believed that the improvement is of a transitory nature, but, on the other hand, has come to stay. Furnacemen are heartily tired of selling their product at prices that showed no profit, and even in some cases were accepted at less than cost. It will be readily seen that considerable improvement has taken place in the past few weeks, which, as stated above, has no doubt come to stay. We quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$15.50 @ $15.75
Southern Coke, No. 2 Foundry,	14.50 @ 14.75
Southern Coke, No. 3 Foundry,	13.75 @ 14.00

Gray Forge	13.00 @	13.25
Southern Charcoal, No. 1 Foundry	17.00 @	17.50
Southern Charcoal, No. 2 Foundry	16 50 @	16.75
Missouri Charcoal, No. 1 Foundry	15.50 @	16.00
Missouri Charcoal, No. 2 Foundry	15.00 @	15.50
Ohio Softeners	17.75 @	18.75

Bar Iron.—Orders for 2100 cars were placed with local builders during the past week, and as a consequence trade in this department is considerably animated in consequence. Mills are pretty well filled with orders, and, as stated in these columns two weeks since, are not particularly anxious to sell too far ahead, as the outlook for an early advance in price is daily growing better. For prompt shipment we quote 1.72½¢ @ 1.77½¢ for lots from mill. Small lots from store command 1.85¢ @ 1.90¢, according to quantity.

Barb Wire.—Trade is improving somewhat, and under the new schedule there are fewer complaints regarding prices. We quote as follows: Carload lots of Painted, 2.85¢; Galvanized, 3.35¢; less than car lots, 5¢ ₩ cwt. additional. Terms 30 days or 2 % discount for cash within ten days from date of invoice.

Wire Nails.—There is no special change to note either in price or demand. Mills are kept fairly well employed, and report the outlook as improving. Carload orders are taken at $2.10 and small lots from store at $2.25.

(*By Telegraph.*)

Metals.—Pig Lead continued to improve. During the past week more than 2000 tons of Common and Refined changed hands at prices ranging from 4.30¢ to 4.35¢. Spot Lead is scarce at 4.35¢. The market is considered strong, and with a continuance of the present demand it seems quite probable that higher prices will shortly be in order. Spelter does not improve much; demand is light, and consumers who have ordered ahead are asking to have their regular shipments held until later in the year. The holdings of Spelter are accumulating more rapidly than sellers care to see. Orders for immediate delivery are filled at 4.70¢, although it is quite possible this price would be shaded should buyers insist. The market can, therefore, be quoted from 4.65¢ to 4.70¢.

New York.

Office of *The Iron Age*, 96-102 Reade street, } NEW YORK, September 23, 1891. }

American Pig.—Dealers generally report an increasing amount of business and more widespread inquiry. The majority of the furnace companies decline to sell beyond this year's delivery, making an exception only when customers need Iron for next year to cover on contracts entered into. The majority of sellers are holding firmly, but yet low prices are occasionally made. There has been a little more activity in Charcoal Iron and prices are held at a somewhat higher level, particularly for delivery over a long period of months. The low price of $17 at Buffalo, made some time since, cannot now be repeated, while on Southern Iron $15.50 at furnace was named for Nos. 1 and 2 on moderate sized lots, with the privilege of increasing to 2000 tons. The lowest price thus far made was on a contract entered into some time since by a St. Louis car company at $15. Northern brands are quoted at $16.75 @ $18 for No. 1; $16 @ $16.50 for No. 2, and $14 @ $14.50 for Gray Forge. Southern Irons sell at $16 @ $17 for No. 1; $15.25 @ $16 for No. 2; $15.50 @ $16 for No. 1 Soft, and $14 @ $14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—No business of consequence is reported in Spiegeleisen, which we continue to quote at $27.50 @ $28.50. Only small orders have been in the market for Ferromanganese, and it is difficult to ascertain at what price the business was taken. Importers quote the combination price of $64.50, tidewater.

Billets and Rods.—The market is very quiet in Wire Rods, which may be quoted $37.50 @ $38, tidewater. In Billets there is more inquiry for domestic, while foreign are dull, the leading buyers having filled up for the balance of the year some time since.

Swedish Stock.—Swedish Iron remains very stiff, with considerable inquiry. Rivet Rods may yet be quoted $58.50 @ $59, while $66.50 @ $67 is now asked for Bars, jobbers' specifications.

Manufactured Iron and Steel.—The negotiations on one or two large buildings in this market have not yet been closed. Generally speaking new business is on a moderate scale. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.95¢ @ 2.15¢ for Tank; 2.25¢ @ 2.6¢ for Shell; 2.4¢ @ 2.6¢ for Flange, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢.

Steel Rails.—There has been more activity, Eastern mills having booked orders for about 20,000 tons, including a number of small orders for delivery to New England roads. Pittsburgh works have, during the past ten days, taken orders aggregating about 23,000 tons, which include one 15,000-ton lot. There are a number of inquiries in the market, so that there is a slightly improved feeling. The allotments for the different mills, including the Maryland, will probably be settled this week. We continue to quote $30.75 @ $31 at tidewater.

Track Material.—We quote 2.25¢ for Spikes; 1.75¢ @ 1.80¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

Merchant Steel.—We quote Hot-Rolled Shafting 2.05¢ @ 2.10¢; Machinery, 2.15¢ @ 2.25¢; Tire, 2.20¢ @ 2.25¢, and Toe Calk, 2.25¢ @ 2.30¢, delivered.

Warrant Stocks.—The American Pig-Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, September 1, 1891	45,400
Put in yard for 11 days ending September 11, 1891	300
Total	45,700
Withdrawn 11 days ending September 11, 1891	2,500
Net stock in yard, September 11, 1891	43,200

Financial.

In the business outlook there is a fortunate concurrence of events to inspire hopefulness. The arrivals of gold and exports of grain now taking place in the foreign trade are happy omens, and the renewed buying on a large scale of American securities cannot but be regarded with complacency. A fact not less worthy of notice is the assured security of the corn crop of some 2,000,000,000 of bushels, lately in danger from frost, which the high temperature of the last few days has hastened to maturity. It is, therefore, permissible to count with confidence many additional millions of money soon to be included in the wealth of the country. Moreover, the September report of the Department of Agriculture strengthens the view that the previous estimate of a crop of 585,000,000 bushels of wheat is not too high. Accepting the largest estimates of production both at home and abroad, and even assuming that the United States and Canada can export 225,000,000 bushels, the *American Agriculturist* still finds a deficit in the world's food supply of at least 200,000,000 bushels of wheat and rye, with a possibility of the shortage being twice as great, and anticipates a period of grave distress to be eventually experienced by the masses of Europe. That Europe shares in this apprehension is indicated by the extraordinary demand that has already taken place not only for American grain, but "wheat, bran and middlings."

In this market wheat was much lower and depressed on account of the temporary glutting of foreign markets by extensive shipments, but later active speculation was renewed, with transactions on Monday amounting to about 3,500,000 bushels. In corn a novelty was observed, Europe taking about 400,000 bushels at 61¢ @ 61½¢ afloat. Wheat and flour exports for the week were almost unexampled, equivalent to nearly 7,000,000 bushels, against less than 5,000,000 for the week previous. Transportation from the West to the seaboard is already active, with prospects that all facilities will soon be fully taxed. In this respect the railroads only reflect the general prosperity of the country. Another circumstance is the satisfactory relations existing between capital and labor in the various industries, strikes, lockouts, &c., being of comparatively rare occurrence. On the Produce Exchange the house of S. V. White & Co. was reported to have been caught in the September corn deal and made an assignment. Other troubles were rumored, owing to "too much corn."

The story of S. V. White & Co.'s corn operation is told as follows: The deal was organized about two months ago. S. V. White was the principal figure. The deal at first was successful so far as causing an advance in the price was concerned, but when the period of delivery occurred the manipulators were staggered by the heavy receipts of old corn. The loss of the firm, it is thought, is anywhere from $1,650,000 to $2,500,000.

The stock market was active and generally stronger during the week. The most important advances were in the Vanderbilts, the grangers, the Villards, Sugar Refiners, Reading, Distillers and Cattle Feeders, Erie, Louisville and Nashville, Atchinson, Topeka and Santa Fé, the Wabashes, the Missouri, Kansas and Texas properties, and some of the low-priced specialties. The bears made frequent attacks upon the market, selecting those stocks which had been most sharply advanced, but liberal purchases by the arbitrage houses for European account and apparently good local buying, based upon the very decided improvement in the crop situation, absorbed the speculative offerings, and on the removal of the pressure the market promptly recovered. The cable reported several large shipments of gold from Europe, which would account for much of the bullish feeling. The demand for railway mortgages continues brisk and the transactions were on a large scale. The activity was well distributed, all the leading specialties being represented in the dealings. The trunk lines report large gains in earnings. An advance in coal, and the approach of a more active demand for the article, also stiffened the coal properties. State bonds were steady. North Carolina consol 4s brought 98½, and Virginia 6s deferred, 8¾.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	99⅛
U. S. 4s, 1907, registered	116

U.S. 4s, 1907, coupon..... 117
U. S. currency 6s..... 110

In the money market there was a better feeling. At the close call loans touched as high as 9 %, but averaged about 3 %. Time money was quoted at 4½ % for 30 to 60 days and 6 % for all dates from three to six months. There was a good inquiry for commercial paper from the East and some demand, although at full rates, from city institutions. Quotations were 5¼ % for 60 to 90 day indorsed bills receivable, 6 % to 6½ % for four months' acceptances. The bank statement showed a loss of $317,400 cash and of $966,025 in surplus reserve, leaving this item at $7,756,750.

Sterling exchange was weak and the result was large new orders for gold shipments to this country, but the movement of gold hither from Europe was not free, because the banks at the principal centers demand a premium for American coin and bars. There was an arrival of $1,500,000 gold early in the week and it was reported at the close that about $2,870,000 was in transit. A special feature is the increased offerings of cotton bills. Including gold afloat, shipments hither since the return movement commenced a fortnight ago are about $5 000,000.

Outside of speculative circles the general markets are not specially active. In the dry goods jobbing trade the September movement exceeds that of the previous year. Buyers were present from near-by and from the neighboring West and South. Reports from other centers showed improving conditions. In the grocery trade Brazil coffee had another heavy break. Refined sugar sold a shade higher. Cotton was weaker, owing to a pressure to sell. Lard was exported freely to Cuba.

Leading Chicago importers are preparing a protest to the Treasury Department at Washington against the continuous sitting of the Board of Feneral Customs Appraisers in New York.

The Interstate Commerce Commission began a series of sessions in Chicago on Monday.

A rather sensational cut in lake and rail rates from Boston and New England points to St. Paul and Minneapolis has been announced by the National Dispatch. These rates, based on the official classification, are as follows: First class, 50¢; second, 40¢; third, 35¢; fourth, 29¢; fifth, 21¢; sixth, 21¢.

Advices from Washington give information that the attorneys retained by the national banks of the country have commenced to press a suit against the Treasury Department for the restitution of nearly $100,000,000 of taxes which, it is claimed, have been unconstitutionally and illegally collected for nearly 30 years. This alleged unconstitutional tax is the ½ % semi-annual levy upon the circulation of national bank notes which was instituted during the war.

Coal Market.

The condition of the Anthracite Coal market is peculiar and satisfactory or otherwise to operators, according to their relations to the trade. On the part of the several companies it is affirmed that there is no new business now, as they are holding firmly for September prices, with what measure of success remains to be seen. Meanwhile they are busy on old orders not filled September 15. They have canceled all except orders for which vessels had been placed previous to the 15th. The September circular holds good until October 15, when the October circular goes in force, the prices of which are scheduled as follows:

	Broken.	Egg.	Stove.	Chestnut.
Lehigh.....	$4.00	$4.30	$4.40	$4.15
Free.....	3.75	4.15	4.40	4.15

Which is an advance over September of 10¢ for Broken; Egg and Stove, 15¢; Chestnut, 15¢. Coal is selling now, company prices, less 15¢ commission, Lehigh Broken, $3.90; Egg, $4.15; Stove, $4.25; Chestnut, $3.90. This gives individuals an opportunity of cutting under, which they are taking advantage of. Lehigh Pea is about $2. f.o.b.; Free-Burning Pea, $2.10 @ $2.50, according to quality; Buckwheat, $1.50 @ $1.60.

Total production for the week ending 12th inst., 707,000 tons, a decrease of 106,900 tons compared with the corresponding week last year. After October 1 the present restriction will be removed. A Philadelphia special says the Reading Company brought down in one day this week 6200 cars of Coal, the largest number in its history.

Freights from New York to Boston are quoted 40¢ @ 55¢ and discharge.

Cumberland reports for the week ending 17th, 79,000 tons; total for the year to date, 2,963,000 tons.

The following statement of Anthracite Coal shipments for month of August, 1891, compared with the corresponding period last year, compiled from returns furnished by the mine operators, is furnished by John H. Jones, chief of the Bureau of Anthracite Coal Statistics:

Region.	August, 1891.	August, 1890.	Difference.
Wyoming.....	1,669,625	1,749,217	*79,592
Lehigh.....	569,640	578,370	*68,730
Schuylkill.....	907,169	964,064	*3,104
Totals.....	3,146,436	3,291,652	*145,217
Region.	For year 1891.	For year 1890.	Difference.
Wyoming.....	13,278,819	11,363,073	†1,915,746
Lehigh.....	3,982,850	4,041,830	*58,980
Schuylkill.....	7,641,198	6,562,780	†1,078,418
Totals.....	24,902,868	21,967,684	†2,935,184

* Decrease. † Increase.

The stock of Coal on hand at tidewater shipping points August 31, 1891, was 648,900 tons; on July 31, 1891, 703,634 tons; decrease, 54,734 tons.

Metal Market.

Copper.—The market for Lake Superior product is, if anything, stronger than it was a week ago. In certain quarters, where prices are adjusted to suit the whims of a limited speculative circle, and from there disseminated through the daily papers as reflecting market value, comparatively low and decidedly misleading quotations have gone broadcast. Not only that, but the market has been represented as being positively dull, when, in fact, business was on quite a large scale. At least 400,000 lb were sold at 12⅛¢ during the early part of the week under review. Since then nearly if not quite 500,000 lb have been placed at 12¼¢ for delivery during the balance of year. On the Metal Exchange a contract for 25,000 lb for October delivery at 12.35¢ was recorded, but subsequent bids of the same price failed to draw out additional parcels. The lowest offer was at 12.45¢, which on Exchange terms is relatively higher than 12¼¢ regular. Home consumers are consuming more Copper at present than at any previous time this year, the late break in prices for Manufactured Copper and Brass having drawn in numerous orders from various sections. Export movement has served to cut surplus stocks considerably, also leaving producers well in control. Arizona Ingot, of which there is only a moderate supply available, is quoted at 12¢ @ 12¼¢. Casting brands remain at 11½¢ @ 11¾¢, without movement of important volume the past week. The official report of the Bureau of Statistics gives the following data of exports from the United States during the seven months ending July 31:

	1891.	1890.
Ore, tons.....	27,191	12,828
Ingots, bars and old, pounds..	39,724,311	7,312,546

Pig Tin.—The present situation differs in no marked degree from that of last week. Light Straits shipments during the first half of the month seem to have curbed what "bearish" tendency there may have been among local operators, and, in the absence of any incentive from London the "bull" interests have remained passive. The speculative market, in short, has been a tame, uninteresting affair. Consumers' purchases, according to current report, compare favorably with those of the preceding week. If anything, the distribution has been somewhat larger. Prices averaged a shade higher during the latter portion of the week and were fairly firm at the close. Ten-ton lots were not on offer at less than 20.10¢, net cash. Jobbing parcels sold at 20¼¢ @ 20⅜¢ regular out of store. Futures sold on Wednesday to the extent of 60 tons at 20.15¢ on November and December.

Lead.—Purchases for consumption have again been on a fairly large scale and the market is stronger, if anything, than it was at the date of our last review. Speculative dealings, while on a slightly larger scale, figure rather more prominently and suggest that "bullish" feeling is not confined to the smelter alone. However, outside dealings are but a small portion of the entire turnover, which, for the past week, exceeds 1000 tons. Some sales were made at 4¼¢, but the bulk of business was at 4.52½¢, with 50 to 100 ton lots going at the latter rate. At the close 4.55¢ upward was asked for this and next month's delivery. On the basis of 4.55¢ a number of sales were made in neighboring markets.

Spelter.—Fully 20 carloads of Western Spelter have been sold at 5¢ @ 5.05¢, as to brand, and the market shows decidedly firmer tone. Some of the less popular brands may be secured at 5.05¢, but offers at less than 5.07½¢ are exceptional at present and 5.10¢ is generally asked for popular brands.

Antimony. — Demand has been of merely routine character, and prices still recede under the pressure of rather active competition. Hallett's is quoted at 9¾¢, LX at 10½¢, L. J. & C. at 10¾¢ and Cookson's at 12¢ @ 12¼¢, in wholesale quantities.

Tin Plate. — Business has been of rather small volume, and the demand spiritless, with little interest shown in other than moderate-sized parcels for immediate delivery. Values are somewhat irregular, yet without radical change. Cokes and Bright Charcoals barely hold their own, but Terne Plates, being in limited supply, are exceptionally firm. We quote: Coke Tins—Penlan grade, IC, 14 x 20, $5.35; J. B. grade, do., $5.45; Bessemer do., $5.40; Siemens Steel, $5.50; Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.75; Siemens Steel, IC basis, $5.85 @ $6; IX basis, $6.85 @ $7. IC Charcoals—Melyn grade, $6.50; for each additional X add $1.50; Allaway grade, $5.85; Grange grade, $5.90 @ $5.95; for each additional X add $1. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.50; M. F., 14 x 20, $7.50; do., 20 x 28, $15.50; Dean, 14 x 20, $5.40; do., 20 x 28, $10.60; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10; Mansel, 14 x 20, $5.30; do., 20 x 28, $10.25; Alyn, 14 x 20, $5.35; do., 20 x 28, $10.35; Dyffryn, 14 x 20, scarce; do., 20 x 28, $11.20 Wasters—S. T. P. grade, 14 x 20, $4.90; do., 20 x 28, $9.85; Abercarne grade, 14 x 20, $4.90; do., 20 x 28, $9.65.

New York Metal Exchange.

The following sales are reported:

THURSDAY, September 17.

10 tons Tin, November..... 20.10¢
10 tons Tin, spot..... 20.05¢

FRIDAY, SEPTEMBER 18.

16 tons Lead, September..... 4.50¢
32 tons Lead, September..... 4.52½¢
50 tons Tin, September..... 20.00¢
50 tons Tin, October..... 20.00¢

MONDAY, September 21.

25 tons Tin, last day of September..... 20.10¢
25 tons Tin, November..... 20.15¢

TUESDAY, September 22.

25,000 lb Copper, October..... 12.35¢
16 tons Lead, November..... 4.52½¢
25 tons Tin, spot..... 20.05¢

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, September 23, 1891.

The movement in prices of Pig Iron warrants has been narrow, but upon the whole the market shows firm tone. Outside interest in Scotch is restrained, owing to control exercised by the London syndicate. A better feeling exists, however, and were it not for the "ring" we would doubtless have an upward movement in prices, encouraged by the upwaad turn in prices of stocks. There has been a good business in Cleveland and Hematite warrants. Shipments of the former are quite heavy and general consumption is better, chiefly in the Steel trade. Latest sales of warrants were at 47/6 for Scotch, 40/7½ for Cleveland and 50/6 for Hematite.

Pig Tin prices, after receding to £91 for prompts, improved under the influence of Straits shipments being smaller than expected. The latter circumstance prompted some buying for "long" account as well as covering of "short" sales. The consumption continues good. During the past few days speculation has fallen off in the absence of encouragement from the leading operators.

Copper is easier, with Merchant-Bar prompts off to £52. 5/. Consumers still buy very cautiously, but recent heavy deliveries are surprising, considering the stand-still policy of consumers during the greater part of the month.

Business in Tin Plate is still restricted and buyers manifest less interest. Makers are at present freely offering ordinary Bessemer at 13/, although expressing confidence in a better demand shortly.

The demand for Steel Ship Plates is more active and the market is firmer; £6. 2/6 is named by makers as a close price.

Scotch Pig Iron.—In makers' brands business has been moderate, and prices have undergone very little change.

No. 1 Coltness,	f.o.b.	Glasgow	58/6
No. 1 Summerlee,	"	"	57/
No. 1 Gartsherrie,	"	"	57/
No. 1 Langloan,	"	"	58/6
No. 1 Carnbroe,	"	"	48/6
No. 1 Shotts	"	at Leith	58/6
No. 1 Glengarnock,	"	Ardrossan	57/6
No. 1 Dalmellington,	"	"	51/
No. 1 Eglinton,	"	"	50/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—Sales of makers' brands are very fair, and the market is steady at 40/6 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Business has been on a more limited scale, but prices remain quite firm at 51/ for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—The market is dull and prices are without change. English 20 % quoted at 95/, f.o.b. shipping port.

Steel Rails.—No improvement in the demand. Lower prices named by some manufacturers. Heavy sections quoted £4. 2/6, and light sections £4. 10/ @ £5, f.o.b. at N. W. England shipping point.

Steel Blooms.—Demand continues slow. Makers quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Transactions chiefly in moderate parcels and at former prices. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—There is little doing, but former prices are asked. Bessemer quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Little doing in this line, and prices without change. Tees quoted at £2. 17/6 @ £3 and Double Heads £3 @ £3. 2/6, f.o.b.

Scrap Iron.—Holders' prices remain as before, but sales are moderate. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—A moderate movement at former prices. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—The market remains very quiet and without new feature. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	15/3 @ 15/6
IC Bessemer Steel, Coke finish	13/6 @ 13/9
IC Siemens " " "	13/9 @ 14/
IC Coke, B. V. grade	13/3 @ 13/6
Charcoal Terne, Dean grade	13/3 @ 13/6

Manufactured Iron.—There is a fairly active business in most lines and prices are quite steady. We quote, f.o.b. Liverpool:

	£ s. d.		£ s. d.
Staff. Marked Bars		@	8 10 0
" Common "	6 12 6	@	6 15 0
Staff. Bl'k Sheet, singles		@	7 7 6
Welsh Bars (f.o.b. Wales)	5 10 0	@	5 12 6

Pig Tin.—The market closes firm, but quiet. Straits quoted at £91. 7/6, spot, and £91. 17/6 for three months' futures.

Copper.—Demand still rather slow. Merchant Bars quoted at £52. 7/6, spot, and £53, three months' futures. Best Selected, £55. 10/.

Lead.—Business fair and the market steady. We quote at £12. 5/ for Soft Spanish.

Spelter.—Demand fair and the market steady at £23. 15/ for ordinary Silesian.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 11
Downing, R. F. & Co., Mach'y, cs., 12
Falk, J. E., Mach'y, cs., 50
Martin, Robert, Mach'y, pgs., 24
Scott & Camerden, Mach'y, cs., 12
Wiebusch & Hilger, Hdw., cs., 2; Anvils, 280.

Princess Furnace, at Glen Wilton, Va., has been relined, and will blow in in about a week. The old lining had been used continuously for upward of seven years.

Sculpture in Relief.

All works come under the denomination of "relievo" that have the figures or objects attached to a background. However slight this connection may be, says a foreign exchange, the mere fact of touching the background establishes the sculpture as belonging to this class of art. The groups in the metopes of the Parthenon are, as nearly as possible, entire statues. Portions of them are, in many instances, quite free and detached, but still in some parts they touch and are united with the ground, and thus, as a whole, they constitute legitimate relievi. The groups in the frieze of the same building, on the contrary, lie or are attached so closely to the ground that none of the parts exhibited project so far as to be entirely free from contact. Modern art phraseology has supplied distinctive terms to express the varieties and modifications of relievo; and we receive from the Italian nomenclature alto, for extremely high or projecting work, basso relievo for the treatment referred to in the frieze of the Parthenon, and mezzo for the class of relievo which is between the two. There are, however, some peculiar modes of treating basso-relievo which require to be noticed. In works of this class, in Egyptian sculpture, are some that have the representation sunk below the plane or face of the material. The object is modeled or carved not on but in the ground, almost as a relieved intaglio, there being no background; but the face or ground is left up in its original state. Thus no portion of the carved, or what would be called the relieved work, projects beyond the original surface to break the architectural profile. It is a mode of treatment that has its recommendations, and it might be introduced with great advantage under particular circumstances in interior decoration. There is another mode of execution, belonging also to the class of basso-relievo, which might be advantageously adopted where the light is insufficient for giving effect to prominent parts, or where it falls at a very obtuse angle upon the work. This is found chiefly in the compositions of Donatello. The relief is as low as in the Egyptian work before alluded to, but instead of the edges being rounded till the outline is softened to the ground, as in the case with the Egyptian execution, the outline is rather sharply defined against the background, this background being lowered, though very slightly, as in other works in relievo. From the extreme flatness of the execution this style of design is called by the Italian writers on art *stracciato*, which means smashed down or flattened. In these works the inner parts are little more than drawn, being incised or cut in sharply, with no projection even on the parts most prominent in nature.

The official report of the fiscal year of the St. Mary's Falls Canal shows a greatly increased traffic over previous years. The following is a condensed statement of the year's record: Number of passages, 9541; lockages, 4614; registered tonnage, 7,441,423; freight tonnage, 8,338,981; passengers, 26,226; net tons coal, 2,298,486; net tons copper, 34,881; barrels flour, 846,023; bushels wheat, 11,184,789; bushels grain other than wheat, 3,291,084; net tons iron ore, 873,044; net tons pig and manufactured iron, 108,441; barrels salt, 188,292; net tons silver ore, 3076; feet lumber, board measure, 383,461,000; net tons building stone, 45,506; net tons miscellaneous, 354,376; cost per lockage, $9.84; cost per vessel, $4.76; cost per registered ton, 6.1 mills; cost per freight ton, 5.4 mills; total time of lockages, 3103 hours and 50 minutes; average time per lockage, 35 minutes. The total registered tonnage passing through the canal since its opening in 1855 is 63,971,299, and the largest during any one month is 1,416,035.

HARDWARE.

Condition of Trade.

THERE IS an evident increase in the volume of business and a good trade is doing, both jobbers and retailers buying with somewhat more freedom. The demand, however, is not as yet exceptionally heavy for the season, and some disappointment is expressed that the market is not characterized by more life and snap. There is, however, every prospect of an excellent trade, which will probably develop in volume as the season advances. The ground for the expectation which so generally prevails that trade will for some time to come be exceptionally good is the extent of the crops, the certainty that exports will be unusually large and the general prosperity existing throughout the country. Prices, however, continue thus far without general improvement and many lines are regarded as very low. To what extent there will be strengthening in price remains to be seen, as the capacity of the factories has certainly kept pace with the development of the country, and will probably be equal to the demand of the trade. Merchants are, however, showing a disposition to place orders somewhat more freely, under the conviction that prices on goods well bought are not likely to be lower, with some prospect of either a stiffening in price or a scarcity in certain lines, which might be temporarily embarrassing. The fine weather which has very generally prevailed has had the effect of keeping the farmers busy, thus somewhat delaying their fall purchases, which, in the usual course of things, must soon be made, thus decidedly quickening the demand upon retail merchants and giving a stimulus to business, which will probably be felt all along the line. While considerable complaint is made in regard to collections, there is evidently some improvement in this direction.

Chicago.

(By Telegraph.)

The demand for Hardware is broadening. Orders are not only more numerous than they have been, but are larger. Jobbers report large percentage of their trade is Shelf Hardware, staple goods being comparatively neglected. Tin Plate is firm. The large stocks are now nearly run out, and the general trade are buying quite freely again. Sheet Copper is active, buyers being apprehensive of an early advance by manufacturers, and feeling that prices cannot well go lower than they now are. Staple goods generally are fairly firm, but here and there some weakness is shown by manufacturers who need orders. This is probably caused by withholding of specifications by their customers, who will, of course, crowd in as soon as the market begins to look a little active.

St. Louis.

(By Telegraph.)

The movement in Hardware continues to gain in volume. A large number of country buyers are here, which lends an air of activity in and about Hardware circles. Interviews with a number of these dealers indicate that they are buying largely in excess of their purchases of last year, on account of the very favorable crops. Cotton fails to improve, so far as price is concerned, and the Southern trade shows a decided falling off in comparison with former years. There is no particular demand for any special line of goods, but orders received are generally for assortedstocks. Prices, while in some cases shaded, are, on the whole, fairly well maintained. Collections are easier.

Notes on Prices.

Wire Nails.—In this line the volume of business is good, and most of the mills are well occupied on orders, but evidently have no accumulation of stock, as it is not always easy to obtain immediately such Nails as are required. Prices show no improvement, nor have they receded since our last report. Quotations are on the basis of $1.85 to $1.90 for carload lots at mill, a slight advance, according to the views of the manufacturers, being demanded for smaller lots. Retail parcels from store are quoted at from $2.10 to $2.15, though these prices are sometimes shaded on desirable orders. There continues to be a fair demand for Wire Nails for export, a trade which has within the last year or two considerably expanded. Our manufacturers are, however, feeling more keenly now than heretofore European competition in this line, and the present prices ruling in this country, though regarded as exceptionally low, are considerably higher than Wire Nails can be obtained in the colonies from Continental manufacturers.

Chicago, by Telegraph.—Prices from factory are now about $1.95, Chicago, for September and October delivery. Beyond October the manufacturers are not willing to make contracts at present, although they have been tempted by offers of large orders at existing prices. Jobbers now quote $2.10, from stock, with the usual abatement of 5 cents on carloads.

Cut Nails.—The market continues in a very unsatisfactory condition and prices show no improvement, with, perhaps, slight indications of further weakening. Manufacturers are evidently desirous to sell, and the result is active competition, which keeps prices at their present unprofitable level. The volume of business is, however, in the aggregate fairly large, but the stock of Nails is ample for present or prospective requirements. Manufacturers are hoping that the market will take a favorable turn, and that an improvement in general trade and a stiffening in prices of Iron and its products will enable them to obtain more satisfactory prices. In the East there is scarcely any difference in the prices at which Iron and Steel Nails are quoted, the quotation being on the basis of $1.50 to $1.55 for carload lots at mill with the usual average. Nails in the Wheeling District are regularly held at $1.60, a price from which concessions are sometimes made.

Chicago, by Telegraph.—Large buyers continue to replenish stocks as rapidly as they are reduced, evidently believing that prices cannot drop enough to hurt them, while a sudden advance would give them a good profit. The history of the Nail trade is expected to be repeated this winter, if not during the fall, and very low prices give way to a period of higher figures. Just now it almost seems absurd to talk of high prices, as manufacturers are keenly competing with one another, and are apparently struggling to reach lower depths. The usual quotation from factory is $1.70, Chicago, but the average of the specification varies according to the views of the seller. Jobbers quote $1.75 to $1.80, from stock.

Barb Wire.—Manufacturers refer to the satisfactory working of existing arrangements and report increased business. The trade are evidently buying more freely and business is moving along smoothly, the jobbers appreciating the rugularity which characterizes the market. There is no complaint of the cutting of prices on the part of manufacturers, and there is a comparative uniformity in the quotations at which the jobbers are selling.

Chicago, by Telegraph.—Manufacturers report their business gradually increasing, which they ascribe to the fact that the trade are now becoming satisfied that prices can be maintained. No changes have been made in the schedule of the Columbia Patent Company.

Scythe Snaths.—Negotiations with a view to completing the organization of the National Snath Company and settling some details in regard to their operations are in progress, and it is expected that the arrangements will soon be completed and in definite shape. As a base price discount 50 per cent. has been adopted, with additional discount for quantities.

Cabinet-Makers' Benches.—An error occurred in our issue, 10th inst., in quotation of Cabinet-Makers' Benches manufactured by Grand Rapids Hand Screw Company, Grand Rapids, Mich., the list prices of which were referred to as subject to a discount of 35 per cent. The

discount on these goods, however, is but 15 per cent., the company's Hand-Screw list being subject to 35 per cent. discount. The company's Benches are sold from the following list, which is subject as above to a discount of 15 per cent.:

Regular size Cabinet Bench	$10.00
6½ feet long by 30 inches wide, with 16-inch maple top	11.00
7 feet long by 30 inches wide, with 16-inch maple top	12.00

Glass.—After some delay, when there was some possibility of a strike, the question of wages has been satisfactorily settled, and it appears that there will be no strike or lockout in the Window Glass trade this year. A conference of manufacturers and workers was held at Pittsburgh last Thursday, and last year's scale was again adopted. This week the manufacturers will meet to determine the time for the resumption of work, which will probably be early in October. In Pittsburgh, owing to the change in fuel, it is thought that comparatively little Glass will be made before November. The long shut-down and the curtailed production of last fire have greatly reduced manufacturers' stocks, and there is some scarcity in leading sizes, with a possibility of shortage before the new Glass is on the market. The demand is improving and there is a prospect of good business. Printed quotations for American Window Glass in carloads continue 80 and 10 per cent., less than carload lots being held at 80 and 5 per cent. discount, but these prices are sometimes shaded.

Eureka Door Stop.—We give below the list prices of the Eureka Combined Door Stop and Hold Back, manufactured by Kinsley & Frisbie, Bridgeport, Conn., A description of this article was given in our last issue. John H. Graham & Co., 113 Chambers street, New York, have been appointed agents for its sale. The list as given below is subject to a discount of 50 per cent.

	Per doz.
No. 100, Wall Attachment, Iron, finished in Berlin Bronze	$2.00
No. 102, Wall Attachment, Iron, finished in Maroon Japan	2.00
No. 104, Wall Attachment, Iron, finished in Black Japan	2.00
No. 106, Wall Attachment, Nickel Plated,	3.50
No. 108, " " finished Brass, Lacquered	5.00
No. 200, Floor Attachment, Iron, finished in Berlin Bronze	2.25
No. 202, Floor Attachment, Iron, finished in Maroon Japan	2.25
No. 204, Floor Attachment, Iron, finished in Black Japan	2.25
No. 206, Floor Attachment, Nickel Plated,	3.75
No. 208, " " finished Brass, Lacquered	5.50

Snaps and Rope Goods.—The following is the price-list of the E. Covert Mfg. Company, Farmer Village, N. Y., on the line of Snaps, Rope Goods, &c., which they are putting on the market:

Rope Horse and Cattle Ties.

One Snap and Thimble.

No. 311, ¼-inch Jute Rope, 8½ feet	$1.23
No. 312, ¼-inch Manila Rope, 8½ feet	2 13
No. 312, ⅜-inch Jute Rope, 10 feet	1.55
No. 314, ⅜-inch Manila Rope, 10 feet	2.38

Rope Halter Leads.

One Snap, C Plate.

	Per doz.
No. 315, 7-16 inch Jute Rope, 6 feet 6 inches	$0.76
No. 316, ¼-inch Jute Rope, 6 feet 9 inches	.93
No. 317, ¼ " Manila Rope, 6 feet 9 inches	1.62

Patent Open Spring Snaps.

Round Eye, C Plate.

Nos.	318	319	320
Size of Eye	⅝	⅝	¾
Per gross	$2.85	2.93	3.00

Rein Chains.

With Patent Open Spring Snap.

	12-inch C Plate.	18-inch C Plate.	24-inch C Plate.
No. 321, per dozen.	$0.76	1.04	1.34

Patent Open Spring Snaps.

Loop Eye, C Plate.

Nos.	301	302	303	304	304½
Size of Eye, inch..	⅝	¾	⅞	1	1⅛
Per gross	$2.20	2.25	2.40	2.55	3.45
Nos.	305	306	307	308	
Size of Eye, inch..	1¼	1⅜	1¾	2	
Per gross	$4.20	4.58	5.10	5.70	

With Patent Open Spring Snap.

No. 309, C Plate, for Rope ⅝ inch or smaller, complete with Snap, per dozen.	$0.63
No. 310, Galvanized, for Rope ⅝ inch or smaller, complete with Snap, per dozen.	.63

Stove Boards.—While the prices of Stove Boards may be referred to as on the whole fairly well maintained, a disposition on the part of leading Western jobbers is to cut prices more or less openly, the regular price being thus shaded, with a further private understanding by which an additional concession is made.

Trade Items.

THE MANY FRIENDS of J. C. Milligan, vice-president of the Lalance & Grosjean Mfg. Company, 19 Cliff street, New York, will learn with regret that he has resigned the position which he has so long and efficiently occupied. This action is taken on account of his somewhat impaired health, but we are advised that his long absence from business has already greatly improved his health, although it is not yet sufficiently restored to permit him to resume the active part that he has taken in the affairs of the company for a period of nearly 40 years. Mr. Milligan is still a director and one of the largest stockholders in the company. He will enter upon his well-earned rest from onerous business duties with the best wishes of the trade and the hope of an early and complete restoration to health.

THE AFFAIRS of the American Machine Company, Philadelphia, appear to be still in a somewhat unsettled condition, but we are advised that the syndicate of judgment creditors are arranging for a new organization which they hope to have complete before long. In the meantime they are endeavoring to fill all orders as usual.

WE ARE INDEBTED to the Nolton & Adams Hardware Company, Port Townsend, Wash., for a description of that city, published by the Port Townsend Chamber of Commerce, in which much information is given, and its varied commercial advantages are briefly, but clearly touched upon. A map of Washington has also come to hand, an inspection of which reveals the advantageous location of the city.

WM. SCHOLLHORN & CO., New Haven, Conn., have been succeeded by the Wm. Schollhorn Company, a stock company with a capital of $75,000 paid in. The new company have acquired the patents of Bernard's Patent Parallel Pliers and specialties, and have also admitted Wm. A. Bernard into the business, Mr. Bernard being referred to as possessing much ability as an inventor and mechanic. The company will manufacture principally the well-known Star Brand Scissors and Shears and Bernard's Patent Hardware Specialties. They have made arrangements to increase their facilities and expect to employ 150 hands before the year is out. The officers of the company are as follows: John J. Henderson, president; Wm. A. Bernard, vice-president; Frank J. Schollhorn, secretary and treasurer, and Julius Berbecker, general manager.

THE PARTNERSHIP heretofore existing between Charles Black and C. A. Whitwam, dealers in Hardware, Hamilton, Mass., has been dissolved by mutual consent. A new firm under the style of Whitwam & Swanson have purcased the stock and will continue the business at the old stand.

AS APPEARS by their announcement among the Special Notices, Haydock & Bissell, 12 Murray street, and 15 Park Place, New York, will conduct a special and peremptory sale of Table and Pocket Cutlery, Carvers, Butcher Knives, Plated Spoons, &c., on Tuesday and Wednesday, September 29 and 30. This sale will comprise a large and desirable assortment of these goods, and is worthy the attention of the trade.

THE AMERICAN AXE AND TOOL COMPANY'S factory at Johnsonville, N. Y., which has been on a strike, resumed work in all departments on Monday of this week. We are also advised that the strike has ended at their East Douglas factory, which is also again in operation. There are thus but two of the company's factories now out, those at Lewistown and Beaver Falls, with excellent prospects of their being started in the near future.

THE TRADE will observe on another page the advertisement of the Norton Door Check and Spring Company, 505 Sears Building, Boston, in which they illustrate the Norton Door Check. In regard to this article the point is made that with it doors cannot slam nor fail to close tight.

THE CAPITOL MFG. COMPANY, Chicago, Ill., have received intelligence that they have been awarded a silver medal at the Jamaica Exposition.

MR. PILLSBURY of Haynes, Pillsbury & Co., Bangor, Maine, died suddenly on the 9th inst. James H. Haynes, the surviving partner, in a circular to the trade announces that arrangements have been made until further notice for the continuance of the business as heretofore.

DOZIER, LOGAN & CO., Gainesville, Ga., have been succeeded by the Logan Hardware Company, which have been organized with a capital stock of $50,000.

ANNOUNCEMENT IS MADE that the Electric Cutlery Company, 91 Chambers street, New York, have purchased the entire plant and business of the American Knife Company, Thomaston, Conn. The latter company were organized in 1849, and for years occupied a prominent position in the Knife business. The manufacture of this line of goods will be temporarily continued at Thomaston, but in the near future the entire business will be removed to Newark, N. J., where it will be consolidated with the present factory of the Electric Cutlery Company, thus enabling the latter concern to offer a large and complete line of Knives of high quality.

JAMES L. LOGAN and I. C. McCrory, under the firm name of Logan & McCrory, are successors to Morrison & Co., Atlanta, Ga., and are carrying on the business at 32 and 34 Wall street in that city.

ON FRIDAY, September 11, the Overman Wheel Company, Chicopee Falls, Mass., unfurled what is possibly the largest flag in the country, its dimensions being 41 x 71 feet. This mammoth flag was stretched from the top of two five story factories, and gathered within its folds were numerous flowers, which fell into the crowd below when the flag was unfurled. The event took place in the presence of a large concourse of spectators. The flag is without advertising of any kind, being merely a national flag.

HARDWARE IN SOUTH AFRICA.

WE ARE IN RECEIPT of the following letter from Polhemus Lyon, who writes from Cape Town, South Africa. Giving information as it does in regard to that market, which is constantly assuming increased importance in connection with export trade, and touching specially upon a number of matters of interest to Hardware merchants, the letter is deserving the careful attention of our readers:

CAPE TOWN, SOUTH AFRICA, August 26, 1891.

I reached here on August 10, something over 15 days from London, by the good ship Scot, a new steamer of 7000 tons burdon and 12,000 horse power, the largest and finest steamer that has ever crossed the equator. It is a matter of great wonder to me that these South African colonies can support the amount of steam traffic which is now carried on with the home country; there are two steamers a week from Southhampton, England, one of which carries the mail, and there are two or three a month from Liverpool and Glasgow jointly, besides sundry "tramp" steamers, and these weekly lines are paying a dividend of about 10 per cent.

There are a million and a half people in Cape Colony who are consumers of foreign products, besides, of course, quite a large population in the Orange Free State and Transvaal Republic, which are virtually tributary to this colony, Natal, of course, being a competitor for the interior, but I think is losing in the race. Cape Town with its immediate suburbs has a population of over 60,000, and as a business community is very aggressive. The Parliament, which was dissolved ten days since, has voted a large sum for public works, chiefly for the extension of its railroad line to Johannesburg and further points. Already the Cape Colony has 1900 miles of railroad in operation. These roads are mainly owned by the Government and are yielding a profit, though, of course, built with the idea of opening up the country. A very good class of people are coming into the colony, second-class on the steamer rather than third-class or emigrant, so the people here feel very confident of a steadily increasing volume of business.

I am located with an office in this city for a month, and have over 100 feet of sample table to display my several lines. The first merchant whom I brought in to visit me cheered me very much by saying his purchases of American lines were increasing very fast, that he sends indents to America by almost every weekly mail. This has only come to pass very lately. He is a Hardware dealer. I believe that a very much larger assortment of American Hardware sundries could be sold advantageously in this market if proper efforts were put forth. In Australia last year I supplanted many English lines with large buyers, and have reason to believe will do so here.

The colonial people make a great bugbear of our currency and system of discounts. It is true that they receive by every mail American invoices which they have to reduce to a sterling net to get the cost, but they don't like it, and I believe it is a barrier to many lines which have a page or two of discount sheet, giving all sorts of discounts. This could be overcome very advantageously if the manufacturs would make a combination export sheet to go with their catalogue, quoting the discount at which goods would be invoiced and giving as well the net sterling price at this discount, figuring the sterling at 4/2 to the dollar, which is $4.80 to the pound, and the accepted commercial standard. I have been told by several large buyers that such a move on the part of any manufacturer would give him decided preference. If any one thinks there is no weight in the suggestion let him take an eight-page discount sheet, as I have done this past week, and figure 77½ and 16⅔ per cent. and 20 other such combinations and then turn them into sterling, and he will appreciate why the colonial buyer hesitates to tackle such a sum in arithmetic. The sterling net price could be made subject to an extra discount of 5 or 10 per cent., which is very simple in English currency and very popular, because 5 per cent. is 1/ on the £.

Another obstacle which I continually meet with abroad is the frequent changing of prices by American manufacturers. One of my clients whom I represented on my trip of 1889 and 1890, and again on this trip, some time since adopted the plan of making a rigid export price to carry through the year. Every December they make up the export discount for the ensuing year, and hold to it without variation during the 12 months. This certainly pleases the foreign buyers, and the manufacturer, on all but the very closest lines of staples, can well afford to take his chances of rise and fall for the advantage this gives. POLHEMUS LYON.

C. W. Hackett Hardware Company.

A NEW and very comprehensive Hardware catalogue has been issued by C. W. Hackett Hardware Company, St. Paul, Minn. It is an imposing volume of more than 1000 pages, of unusually large size. The book is printed on paper of good quality and substantially bound, a pleasant effect being produced by the two colors in which it is printed, the borders, which are of special design, being in red. The effect secured by the reproduction of some labels in *fac simile* is also attractive. The catalogue is divided into eight departments, as follows:

A. Mechanics' and Edge Tools.
B. Locks, Latches and Builders' Hardware.
C. Farming Tools, Lumbering Tools, &c.
D. Pocket and Table Cutlery, Razors, &c.
E. Carts, Wagons, Bicycles, &c.
F. Stamped and Pieced Tinware, Tinners' Tools, &c.
G. Guns, Ammunition, Sporting Goods, &c.
H. Fishing Tackle, Boats, &c.

The department devoted to Mechanics' and Edge Tools appropriately opens with illustrations of the company's own well-known brand of Axes, Hatchets, &c., together with the other lines which they are offering to the trade. This important section contains illustrations of many leading goods, with some novelties and specialties which have recently been put on the market. Section B gives a prominent position to Wrought-Steel Door Locks, which are referred to as a new and important departure. The attractive appearance of these goods and the variety which is put on the market render them deserving the attention of the trade. Other goods in this line are shown in excellent assortment, and care has evidently been taken to secure a convenient arrangement in the catalogue. In connection with Cabinet Locks a convenient classified and comparative list is given showing the numbers of the different manufacturers, with a concise description of the goods. In the appropriate department many salable patterns of Pocket and Table Knives and other Cutlery are illustrated, the section closing with Silver-Plated Ware, of which a good assortment is shown. The space devoted to Guns, Ammunition, Sporting Goods, Fishing Tackle, Boats, &c., indicates the attention given to this line by the company, and puts within the reach of their customers a mass of information in regard to such goods which cannot fail to be appreciated. A careful inspection of the volume justifies the reference made by the company in their introductory circular to the completeness of the line of goods carried by them and the many new goods which they have added to their assortment since the publication of their last catalogue.

With reference to the outlook for business, and especially the condition of trade in their city, we have the following advices from the company:

The conditions for a large business were never more favorable in the Northwest than at the present time. The crops, which promised large results before harvest, are turning out even better than was anticipated, and the price for the same must be satisfactory to the farmer. Our State fair has been in progress in this city during the past week, and the attendance has been very large. Merchants from all over the Northwest have availed themselves of the opportunity to come to market, and have left their orders very freely.

A Hardware Boy.

BY THE BOY.

MY EXPERIENCE in the Hardware business began as a clerk in a retail store when 16 years of age. I was first assigned the duties of keeping the floor clear of Nails as they were scattered in weighing, keeping the desks supplied with fresh pens and ink and winding the clock. The store was a large one, giving employment to eight persons besides the bookkeeper. Two of the younger clerks and myself were expected to be at the store at 6 o'clock each morning to take down the wooden shutters, put out the show goods and sweep the store, after which we went to breakfast. My room at a boarding house was as good as I could afford, comfortable in summer, but in the

winter the snow drifted under the window sash and the water would freeze in the pitcher, as there was no way of heating the room. I soon began selling Nails, Strap Hinges, and gradually became familiar with the stock. I have always been thankful that we did not keep Stoves, for if we had I am sure I should have become entirely disgusted with the business. We did, however, carry a complete stock of Iron, Wood Work and Carriage Goods. After I had been in the business about a month I was turned over one day to a German wheelwright, who manufactured vehicles, to be initiated into the mysteries of Carriage Hardware. I afterward learned that this customer lived about 10 miles from the store, and made semi-monthly trips to buy stock. This he had been doing for years, so he knew what he wanted and where to find it. The Malleables and Wrought-Iron parts that go to make up the ironing of a Carriage represented more pieces then than they do now, and were not so nicely finished. I was unfamiliar not only with the names of the various parts, but also where they could be found. I undertook the job of waiting upon the customer with good grace, and was put through a course of sprouts that I never forgot. But this gratuitous education gave me a better insight into Carriage Goods in a few hours than I would have gained in months in the regular course of business.

As I was a fair penman I was found to be useful as an assistant to the bookkeeper In checking up the posting, and before long helped in copying the day's sales from the blotter to the day book. This office work gave me an opportunity of becoming somewhat familiar with the financial part of the business. Each evening we closed at eight o'clock, and after supper was the time for cleaning up the counters and ledges and straightening up the shelves. As most of the goods were in papers tied with string it was no easy undertaking for a greenhorn to make a presentable looking package. It was particularly hard to do up a package of half a gross of small Buckles, as each Buckle was as slippery as rice. Iron Handled Nail Gimlets and Tanged Chisels or Gouges were among the things I abominated. The paper would become torn with frequent doing and undoing, or in a hurry some one would pull a tool through the paper instead of undoing the package, and the points would stick out in spite of the best efforts. Locks, both Rim and Mortise, were a mystery that the younger clerks were not allowed to solve. In fact, one man in the store had charge of the Locks, as the intricacies of right and left hand Locks were too great to be understood by every one. The right and left hand business also extended to Butts. One day a farmer wanted a pair of Loose-Joint Butts for a kitchen door. When asked whether he wanted right or left hand Butts, he squared himself around to a desired position, and after a waving of hands, he announced that the door would open toward the pig pen. Fortunately for the present generation, right and left hand goods are little used.

An Armstrong elevator, run by boy or man power, was used to hoist goods from the basement to the second story. A carload of sawed wagon felloes, to go up to the second story, would give enough exercise to satisfy us for some days. The elevator was also used to bring the Steel-Goods rack and Seed rack down from the second story every spring and to take them back again in the fall. A large business was done in Seeds, both garden and grass Seeds. I had been filling an order for Timothy Seed when a customer said he wanted a half bushel. I inquired, "A half bushel of what?" "Why, a half bushel measure," replied the man. Our opinions of each other's stupidity were doubtless reciprocated.

About this time I was very much impressed with a call received from an uncle, who was in the Hardware business in another part of the country. In an interesting conversation I was told what a noble and edifying business it was, and that a person who thoroughly understood the Hardware business had as well a developed mind as would result from a college course. From subsequent experience I believe him to have been correct in making the assertion. He also told me that one should so familiarize himself with the location of stock that he could go into the store in total darkness and get any article a customer wanted. The desirability of this attainment took such possession of my mind that after a suitable period of apprenticeship I undertook to exercise my bump of location, simply for my own satisfaction. I went far enough in the dark to knock over a Wheelbarrow which some one had unintentionally left in the aisle, and in attempting to extricate my legs from the handles of the Barrow I landed in a promiscuous heap upon a pile of Harrow Teeth. My bump of location was sufficiently developed to know just where the Harrow Teeth were, though a paper of Leathered Carpet Tacks had been the object of my search.

At the suggestion of my uncle, I was led to study catalogues at odd moments, and to thus gain a better idea of the goods carried in stock, as well as to learn of goods which could be obtained on special orders. This knowledge gave more satisfactory results than finding things in the dark. It was a rule that if an article was called for which was not in stock, to try and get the customer to wait until we could make a special order for it. I found my knowledge of the contents of the various catalogues enabled me to take orders for goods with credit to myself and to the satisfaction of the customer. The two years spent in the employ of this firm were not years of unalloyed joy, and had it not been for the pride I took in sticking to what I had undertaken I should have given up. The cause of this discontent was not so much the hard, dirty work connected with the position of the last boy as it was some disagreeable features about the management of the business. But however uncongenial the surroundings, the knowledge acquired with this firm laid a foundation for further advancement in the same line of business.

It is not my intention to detail the successive steps leading to a position in a wholesale house, then upon the road as a traveling salesman, and finally to the proprietorship of a store. But I do want to give a word of encouragement to the Hardware boy who is now where I was then, having hard work and discouragements to contend with. You will succeed if you are made of the right kind of metal, and if you improve every opportunity to make yourself entire master of your position. Remember, you will not always have the dirty work to do, nor always have to work for small wages. The qualifications that go to make up a successful Hardware boy's life are far from few; but, in a general way, are much the same as make any life successful. The following maxims might be mentioned as well worth keeping in view: Do not destroy trade, but create it by an affable manner. Obey orders. Keep clean. Always be in a condition to do business. Praise your own goods, but do not run down those of your neighbor. Keep stock in good condition. Don't imagine the firm cannot get along without you. Be prompt, and don't forget that there are smarter people than you. Never be satisfied with the knowledge that you can absorb, but make an effort to learn something from everything you do whether it is sweeping out the store, or selling a bill of goods. Accustom yourself to do things quickly, not hurriedly, and learn to be handy with your hands. Be a thorough and conscientious worker, so that your employer may know that whatever is given you to do will be done in the best possible manner. From an employer's standpoint it is easily seen how important a matter this is. He cannot devote his time to details, nor take the time to do what others can do for him; it must be done by others, and correctly done. Engagements should not be made that are likely to conflict with business. You should willingly give up any anticipated pleasure if your presence is required, even if it is after business hours. You will accomplish more and last longer if your work is confined to six days a week.

Price-Lists, Circulars, &c.

WILLIAM J. LLOYD MFG. COMPANY, Philadelphia: Catalogue of 32 pages illustrating the following goods, of which they are manufacturers: Lloyd's Acme Hand Saw Set, Lloyd's Acme Cross Cut Saw Set, Leopold Hand Saw Set, Leach Hand Saw Set, Leach Cross Cut Saw Set, Bonney Hollow Augers, Bonney Spoke Trimmers, American Spoke Trimmers, Weston Pattern Bench Hooks, Smith Pattern Bench Hooks, Excelsior Can Openers, Charlton's Detachable Meat Hooks, Schmidt's Meat Tenderers, Cotton Braided Chalk Lines, Great American Meat Cutters and Stuffer Attachment, &c. The pamphlet is well printed and fully illustrated, representing in a satisfactory manner the interesting line of goods to which it relates.

E. K. TRYON, JR., & CO., 10 and 12 North Sixth street, Philadelphia: Revised net prices of Guns, September 15, 1891; also

job list of goods which have accumulated in excess of their present wants, remnants of dicarded styles, odd samples, &c. A descriptive list is given with prices.

ST. ALBANS FOUNDRY COMPANY, St. Albans, Vt.: Illustrated catalogue of their Horse-Power Machines for one, two and three horses. The machines are adequately described and full information given in regard to starting and running them. The manufacturers call attention to recent improvements which they have embodied in their products by which increased efficiency has been secured. Fodder Shredders, Speed Regulators, Circular Saws and Frames, Combined Saw Frame and Swing Table, &c., are also represented in the catalogue.

A. TREDWAY & SONS' HARDWARE COMPANY, Dubuque, Iowa: Fall circular showing an interesting line of seasonable goods and calling attention to their assortment of General Hardware, Cutlery, Wood Stock, &c. For the convenience of their customers an addressed envelope and a blank order sheet are inclosed. The price current is prefaced by the following suggestive address to the trade: "There are two distinct classes of Hardware dealers, those who are progressive and wide awake to the march of improvement in their line, in the front rank of 'go ahead and get there' merchants, who have the snap and courage to investigate and then act upon the conviction which is the result of their investigation. These men prosper. The other class, those who are, so to speak, 'living in the dead past,' and are prone to permit things to jog at their own gate, who never investigate anything and consequently are never 'up to snuff.' Such men, who lack the energy required in thinking and the courage of investigation, miss most of the good things of their time. Such men retrograde. We desire to invite the investigation, inquiries and business of all wide awake, progressive, pushing Hardware men, and if you find yourself in the wrong class why not break away at once? To make it easy for you we inclose an addressed envelope and order blanks, and ask you to examine this circular for hints as to our stock and assortment, and then send us either your orders or your inquiries. We will give like prompt and conscientious attention to either."

SCHOVERLING, DALY & GALES, New York: A neat and convenient catalogue devoted to Bicycles and sundries. It represents Gales' Diamond Safety, Model 1891, Gales' Lady Convertible and the Gales Safety, Model 1890. The Featherstone Pneumatic, Columbia Safety and other Machines; Tricycles, Velocipedes and goods related to this line are also illustrated.

THE BIGNALL MFG. COMPANY, Medina, N. Y.: An attractive catalogue devoted to Cistern, Well, Force and Rotary Pumps, patent Cast-Iron Sinks, Soil-Pipe Fittings, Skeins and Boxes, &c. In the display of these goods more than 60 pages are occupied. They call special attention to their Iron Sinks, which are made from new patterns and full size. Their Pumps are referred to as having been materially improved. The price-list is accompanied by a discount sheet.

COLUMBUS MFG. COMPANY, Columbus, Ohio: Post Hole Diggers, Capital City Iron Double-Handle Digger and Columbus Iron-Handle Post Digger, with illustrations.

THE LUNKENHEIMER BRASS MFG. COMPANY, Cincinnati, Ohio: New edition of their patented catalogue, the pages of which are perforated so as to permit their being torn out and mailed to the company for quotations, by whom they will be returned with discount marked.

CURTIS & CURTIS, Bridgeport, Conn.: Illustrated catalogue and price-list of their Pipe Cutting and Threading Machinery. Among the tools represented in the catalogue are the Forbes Patent Die Stock, the Forbes Patent Die Stock arranged for either hand or power use, the Curtis Patent Pipe Threading Attachment for Lathes, Improved Reversible Ratchet Drills, Brook's Patent Chain Pipe Wrench, Stillson's Patent Wrenches Brown's Patent Adjustable Pipe Tongs, Armstrong Pipe Cutter, &c. A large number of testimonial letters are given in the closing pages of the pamphlet.

D. R. SPERRY & CO., Batavia, Ill.: Twenty-third annual price-list, 1891-92. This is a pamphlet of 50 pages, illustrating their well-known line of Farm Boilers, Laundry Stoves, Kettles, Caldrons, &c. They allude to the quality of the goods and refer to the care taken in packing and shipping. The catalogue is accompanied by a discount sheet.

KOELLER & SCHMITZ CUTLERY COMPANY, New York: Fox Razors. A catalogue and price-list of these goods, also of their Patent Pocket Knife. They state that the steel used for Fox Razors is of the very highest grade, tempered by an entirely new process of which they are the patentees.

SLAYMAKER, BARRY & CO., Diamond Lock Works, Lancaster, Pa.: Patent Spring, Self Locking, Scandinavian Pad Locks and other goods. Attention is directed to their Spring Self Locking Scandinavian Pad Locks, which are opened with the key, which is then turned back and withdrawn, and the Lock secured by pushing the shackle into place without the aid of the key. They state that in these Locks there are no revolving pieces, all the tumblers being verticle, held in place by the metal itself. The company are prepared to manufacture articles of brass, bronze, iron or sheet metal for other parties.

THE GLOBE COMPANY, Cincinnnti, Ohio, Office Appliances, Desks, &c.: A book mark of heavy paper, on one side of which are Interest Tables, while on the opposite is a Time Table, showing the time in days from any day in one month to the corresponding day in any other month.

Buying and Selling Fine Hardware.

YALE & TOWNE MFG. COMPANY, Stamford, Conn., who have done much in the way of putting artistic Hardware on the market, issue a pamphlet, entitled "Fine Hardware—How to Buy and How to Sell It." The greater part of this pamphlet is devoted to the illustration of some of their leading lines, with explanation of their special features, but it contains also some suggestions with reference to the handling of such goods which are of general interest and applicable to other lines. From these we extract the following:

HOW TO BUY FINE HARDWARE.

Inspect the work of the principal makers impartially and with the desire to ascertain truly which is best.

Do this critically, examining shelf specimens, not selected samples, noting quality of material, workmanship and finish, and, in the case of Locks, opening them and inspecting their interior mechanism.

In the case of Ornamental Hardware, cultivate a knowledge, even if slight, of the art of decoration.

Follow closely the discussions of architects and customers in their selection of Fine Hardware, in order to learn what they desire, and thus be able to meet their requirements.

Avoid needless variety of stock; a small stock of choice goods is better than a large one illy assorted.

Maintain a stock composed of the carefully selected goods of a few makers, and those of the very best. In this way full lines can be carried with a much smaller volume of stock, and there will be much less capital locked up in goods awaiting sale.

Having selected the makers, study their catalogues carefully, in order to have the benefit of their full line of products. Better still, visit the warerooms or works and personally study the goods themselves.

In the case of Fine Locks, learn enough about Lock construction and Lock security to select intelligently those which not only claim but possess the important qualities, viz.: High capacity for permutations (or "key changes"), real security, and general excellence of construction. Inspect the interior rather than the exterior of a Lock.

Keep fully posted about all new styles and products of the maker selected, and thus maintain your stock always fresh and up to date.

HOW TO SELL FINE HARDWARE.

In the Hardware trade, as in other lines of business, one of the first requisites in selling is to know the intrinsic merits of your goods, and that they are adapted, as far as possible, to the purpose for which they are intended or desired.

When a salesman or dealer can show that he has a knowledge of his business, and courteously tries to use it for the benefit of his customer, the latter will not only be grateful for the trouble, but in the majority of cases will buy the article so recommended.

Believe in what you are selling; it is difficult to impress others with that in which you have no confidence yourself. Enthusiasm promotes success, but the honest man can only be enthusiastic about that in which he believes.

A dealer who merely supplies his customers with the articles which they demand and takes no care to see that the goods are what they should have will get more trade from strangers than from acquaintances.

When a customer has once had the benefit of your advice and judgment he will want it again, and be glad to recommend you to others.

Courage is another requisite; the courage of conviction in making a recommendation and in stating your reasons for doing so, the courage to demand proper compensation for your time, labor and knowledge of your business; the courage to offer the best thing for the purpose, when perhaps a less desirable article at a lower price can be more easily sold.

Always offer the best thing for the purpose first. The adoption of this rule will not only give confidence in your reliability by assuring you the confidence of your trade and by causing people to believe in your judgment, but will also increase your profits.

Trade Topics.

Good Packing vs. Cheap Packing.—We have received the following communication from a Hardware house in Ohio in regard to the packing of Hardware, to which a correspondent referred in our last issue. It will be observed that attention is called to the frequency with which goods are put up by manufacturers in frail or otherwise objectionable packages:

At this time of low prices and close competition, many manufacturers are inclined to reduce the cost of their product, by using cheaper, and consequently a poorer, quality of packages. This is a "Penny wise and pound foolish" practice, that will certainly, in the end, result in loss, for the small saving in the beginning is very soon more than counterbalanced by the decrease in price and damage of reputation, which the goods suffer. "Clothes do not make the man," neither do packages make the Hardware, but good packages are as essential to it as good clothes to any man. Nothing will make goods look shop worn and unsalable so soon as poor boxes in bad condition. Goods put up in strong, neat boxes, with attractive labels, do not require nearly as much effort to sell, as all retailers can testify. Some manufacturers are adopting wooden, or strong pasteboard boxes, with metallic bound corners, which are very strong and cheap, for such articles as Auger Bits, Chisels, &c. This is a move in the right direction, and one that is appreciated by the trade in general, who have grown tired of patching up broken packages, or going to the expense of buying new ones.

How trying it is, to receive a shipment of goods, to find upon opening the cases a conglomeration of Hardware, saw dust and broken pieces of pasteboard, that once did duty as boxes. Everything else being equal, that manufacturer will not receive

the next order for these goods. There is room for reform in the jobbing houses, as the goods sometimes get rough handling from them. The bulk of the blame, however, can usually be traced to the factory.

One class of goods that almost invariably reaches the retailer in bad condition, is Bolts. It is a familiar sight on opening a case of Carriage or Machine Bolts, to find at least half of the papers broken open, the strings off, and the different sizes mixed together in the bottom, in an indescribable mass. It is not only annoying but expensive.

Some of the prominent manufacturers of this class of goods are beginning to use strong wooden boxes for the larger, and pasteboard boxes with round corners for the smaller sizes. Wherever these packages have been introduced they have met with general satisfaction, and are found to be much superior to the ordinary papers, while the cost is but trifling. From the preference shown these goods, it would seem profitable for those manufacturers who have not yet adopted this method of packing their goods to do so at once. Certainly there should be a reform all along the Hardware line in regard to the packages.

In further discussion of the matter of the packing of goods by manufacturers, we have the following advices from a Western Hardware house. It will be observed that our correspondent makes some suggestions with reference to Carriage Bolts, Axes and other goods:

A prominent Hardware dealer suggests that Carriage Bolts be packed in wooden or heavy pasteboard boxes, and upon investigation I find that when shipped to any distance packages do arrive in bad shape. This and kindred lines, such as other Bolts, Screws, &c., should be put in wood if practicable, as they settle in the package and exert a considerable pressure upon its sides. Certainly the kind of pasteboard now in general use should be discarded. A pasteboard box twice as heavy might do very well, and surely would not cost enough more than that now used to make the substitution impossible. I do not see why there is not more complaint made about the way Edge Tools and Axes are put up by some first-class makers. The heaviest Bench Axes are put in boxes no stronger than those used for the lighest fancy Hatchet, and I know that special care must be exercised at the factory to get the heavy goods *en route* to the jobber with the paper boxes intact. If there is any place in which a reform should be made it is right here. There is general carelessness shown in the final finishing of some makes. Far too often in opening up the goods they are found to have been wrapped up before the paint or bronze was dry and the paper has stuck fast; or the labels are awry, or the bronzing was imperfectly done. A better condition of things could be always obtained if it were insisted upon, as such faults lie in lax inspection and careless workmanship. Some years ago when there was an eager competition for the Detroit trade, one of the jobbers there not only got a price below that made any one else that season, but he had his Edge Tools put in cases of a size retailers could buy without breaking, and they were well packed and sent out in first-class order. There are a good many boxes on the shelves made out of the same kind of material that Uncle Sam uses for his envelope boxes. The goods they contain are not heavy, but the boxes if empty would hardly stand the knocking about to which they must be subjected, and they seem sadly out of place in a Hardware store.

Cash Discount.—From a well-known Hardware house we have the following inquiry with reference to the usage of the trade in the case to which our correspondent refers. There would appear to be no doubt as to the equity of the matter and the reply which should be made to our correspondent's query. We, however, refer it to our readers:

Will you kindly advise us as regards the following disputed point in business, more especially as regards what is the business custom in this matter, and also what is correct as a matter of principle. The point is as follows: We have a quotation from a party on goods which are offered to us at a certain price, delivered here, terms 60 days, less 2 per cent. 10 days. The goods come to us and the consignor has not prepaid freight, but leaves it for us to pay, which we do at this end of the route. Are we entitled to deduct 2 per cent from the face of the bill, or from the face of the bill less the freight?

It Is Reported—

That Brand & Lane is the title of a new Hardware firm at Chambersburg, Pa.

That E. H. Davis and J. H. Tully have formed a co-partnership at Lowville, N. Y., and purchased the Hardware business of C. C. Richter & Co.

That C. W. Hanon, Greenleaf, Kan., has sold his stock of Hardware to C. W. Young.

That W. E. Johnson, Des Moines, Iowa, has disposed of his stock of Hardware to R. W. Williams.

That Hiram Hatch has purchased the Hardware stock of Frymire & Son, Pierre, S. D.

That H. Henwood has commenced the Hardware business at Calumet, Mich.

That Fred. Saker has purchased the Stove and Tin business of the late G. F. Hadley, Chester, Vt.

That the Colton Mercantile Company, Colton, Wash., are building a large Hardware store, 50 x 100 feet, which they will occupy on completion.

That Peter Murstad has removed his Hardware business from Steel Plant to West Superior, Wis.

That Alves & Rankin have purchased the Mayer Hardware stock and will largely increase the business, conducting it at Henderson, Ky., as heretofore.

That Welling & Bonnoitt have opened a Hardware store at Darlington, S. C.

That Edward T. Wagner has purchased the Stove and Tinware establishment of Henry Schieppy, Hazleton, Pa.

That John Otheman and Crawford L. Dunham have leased a store at New Bedford, Mass., in which they will carry on the Hardware and plumbing business.

That Walter Wing is soon to become a partner in the Hardware business conducted by Mrs. Leonard F. Gammons, Bridgewater, Mass.

That the Hardware store of Peter Brady, Bellevue, Ohio, was burglarized on September 12, and Knives, Razors, Revolvers and Plated Ware valued at $300 stolen.

That Farrington Bros., dealers in Hardware, Brewer, Me., are carrying a much larger stock than formerly, owing to an increased demand.

That G. C. Walker & Co., dealers in Hardware and Agricultural Implements, Luling, Texas, have purchased stock of Hardware from Dr. Moody, assignee of C. R. Chambers & Co.

That H. A. Thrasher is bulding a Hardware store at Bay City, Mich.

That F. D. Lantz, dealer in Hardware, Paints, &c., Rockland, Mass., is building an addition to his store, which he will fit up as a Stove department.

That J. W. Baker & Sons, Redlands, Cal., have sold their Hardware business to Lehman & Mathes of San Bernardino, who will take possession on September 28.

That Thomas B. Wren will open a Hardware store at San Antonio, Texas, about October 1.

That burglars entered the Hardware store of Kramer & Chaney, Bowling Green, Ohio, on the night of September 12, and stole their entire stock of Guns and Revolvers.

That B. F. Myers, Tiffin, Ohio, has opened up a new store for the sale of Cutlery, Fishing Tackle and Sporting Goods.

That Queen & Co. announce to the trade that they will in a short time transfer their entire plant, now located at 924 Chestnut street, Philadelphia, to 1010 Chestnut street, in order to have room enough to satisfactorily conduct their large and growing business.

That M. T. Howard of the firm of Howard & Bingham, Hardware dealers, Fredonia, N. Y., has disposed of his interest to Willis Hale of Ackley.

That Bach, Cory & Co., Great Falls, Mont., have sold out their Hardware business to a stock company composed of R. R. Hotchkiss, S. S. Hawkins, Starr V. V. Carter, A. E. Dickerman, H. O. Chowen and Geo. Hotchkiss. The business will be consolidated with Hotchkiss & Hawkins, and H. O. Chowen will put up a building to accommodate the new firm. It is proposed to put up a block, 25 x 150 feet, with a warehouse in the rear, 25 x 50 feet. The new block will be hurried forward, and its completion is expected within 90 days. Mr. Powers, who had charge of Bach, Cory & Co.'s Hardware department, will remain in control of the business of the new firm until the projected building is completed. The name of the new organization will be the Hotchkiss & Hawkins Hardware Company, and the capital stock will be $50,000.

That the firm of D. B. Hoffer & Co., Hardware merchants of Mt. Joy, Pa., have been merged into the Mt. Joy Hardware Company. D. B. Hoffer will hereafter devote his time wholly to the Farm Implement business.

That Jones Bros. have embarked in the Hardware business at Coon Rapids, Iowa.

That N. S. Viall, Southbridge, Mass., is closing out his business.

That the Callaway County Hardware Company have been organized at Fulton, Mo., with a capital stock of $15,000.

That O. F. Winkleman & Co, Orlando, Fla., finding their store too small for their increasing business, are about to make a large addition thereto. It will consist of a corrugated iron warehouse, one story in hight, 25 x 100 feet, to be located in the rear of their store. The new building will be used principally for the storage of such heavy Hardware as Stoves and Agricultural Implements, in which this firm do a large business. Work on the new warehouse will be commenced at once.

That the store of Thomas Francis, Kersville, Ohio, was burglarized the night of the 10th inst., $50 worth of Cutlery and Revolvers being taken.

Exports.

PER BARK CARRIE L. TYLER, SEPTEMBER 10, 1891, FOR CAPE TOWN, SOUTH AFRICA.

By Henry W. Peabody & Co.—3 packages Grindstone Fixtures, 1 dozen Corn Mills.
By R. W. Forbes & Sons.—1 case Hardware.
By W. H. Crossman & Bro.—6 packages Agricultural Implements and Parts, 1 bundle Sash Cord, 6 cases Hardware.
By Coombs, Crosby & Eddy.—2 Stuffers, 1 case Hardware, 1 case Tools.
By M. Berliner.—9 packages Fiber Ware, 13 packages Agricultural Implements.

Remittance Blanks.

JUDGING FROM the number of letters we have received from the trade on this subject it is one in which there is a very general interest. Our correspondents writing from different parts of the country send us an interesting variety of forms which they are using, which come to us accompanied in some cases by a reference to the excellence of the arrangement and the advantages possessed by the blanks. We show below the arrangement of a few such blanks, compressing them into comparatively small space. That shown in Fig. 1 is used by Yorke & Wadsworth, Concord, N. C. They allude to it as possessing advantages over others which we have published.

Dear Sirs.—Inclosed find check in settlement of our bills as stated below.

Please acknowledge receipt of same.

Yours Truly,

Yorke & Wadsworth.

By Mdse,		To overcharges,	
"		" Mdse returned,	
"		" Ft. allowance,	
"		" ....pc. discount,	
"		" Check,	

Fig. 1.—Yorke & Wadsworth's Remittance Blank.

William H. Smith & Co., Norwalk, Conn., use a combination form which they originated eight or nine years ago. It is in the form of a folder of a size adapted to the ordinary business envelope. The outside of the folder is devoted to announcements as to the line of goods they carry. The inside, as shown in Fig. 2, is a combined remittance blank and order blank. The announcements on the outside are referred to as an effective advertisement, calling attention to the goods they carry.

The arrangement of remittance blank used by Wallace Armer, Schenectady, N. Y., is shown in Fig. 3.

Norwalk, Conn., ...*1882*

M.....

Dear Sir:

Inclosed please find our check for

.....

in full for account.

Please acknowledge receipt of same.

Truly yours,

WM. H. SMITH & CO.

Per.....

Norwalk, Conn., ...*1882*

M.....

Dear Sir: Please send us .....*per*

.....

and oblige, Yours truly,

WM. H. SMITH & CO.

Per.....

Fig. 2—Combined Remittance and Order Blank.

Hardware Metals and their Finish.

BY W. W. B

THE RAPID PROGRESS made during the past few years in the matter of Hardware trimming has at the same time created a demand for a greater variety in the character of metals and in the finish of same. Brass and bronze, as heretofore, are largely used, but the various styles of finishing have had the effect of changing the appearance in a marked degree. While these metals for interior uses will probably be the ones mostly adhered to, iron, for outside trim, is gradually growing in favor. This is accounted for from the fact that a rustless finish has been found which gives the metal a rich dead black effect, at the same time rendering it to a greater or less degree rustless. For Grille work iron has almost entirely superseded the other metals, and many instances of superior workmanship and true art may be seen in this particular line of ornamentation. The effect of black iron trimming, when appropriately used, is very artistic, and it is a matter to be regretted that more of it is not used, and less bronze and brass.

There are many instances of rows of buildings with front doors all resplendant in brass and bronze, and invariably around each piece will be found soiled wood work—the result of constant polishing. This might be entirely done away with were the door trimmings of iron. In using iron there is no necessity for polishing; consequently there is a great saving in labor and a much more pleasing effect. The most popular finish in iron is that known as Bower-Barff, which is a patented process, and if properly applied renders the metal rust proof. The castings used in this manner are generally subjected to a sand blast, which smoothes the surface and brings out the defects. After the castings have been so treated they are sent to the various departments and the machine work done upon them; they are then subjected to a liquid bath, then put in the baking ovens and heated to a certain degree. After coming from the oven the pieces are again dipped in a bath, then rubbed until dry. At this stage they are ready for the market—having a dead, rich, black finish, and generally pleasing effect, such as is seen in a piece of broadcloth. Wrought as well as cast iron is susceptible of this treatment, the former being generally used in large Grille work.

Brass is not used to a very large extent, except in a natural finish, although it is occasionally applied in finishes to represent the antique or oxidized surface. The greatest objection to this trimming is the necessity of constant polishing, and this is no small item when the building on which it is used is of any considerable size. Bronze for general uses is most favored, and may be had in an endless variety of finishes from the perfectly plain to the more elegant oxidized silver or gold plate. In the more expensive buildings and residences the two latter finishes are very common; in fact, many are furnished almost entirely in oxidized silver trimmings. Bronze treated in this way, when carefully done, will wear for years. The effect of handsome mahogany doors finished with

silver trimmings is very rich, and only the very wealthy can afford any great amount of such trimming. Gold-plated finish is very popular for drawing rooms, and at the same time very expensive. Take, for instance, the Butts for a double door, in a Renaissance style of ornamentation and finished in gold plate. The cost of hanging such a door would probably be about $35, exclusive of Lock, Knobs, Escutcheon Plates, &c. Cheaper grades may be found as well as less expensive designs, but all Renaissance ornamentation to be effective, should be hand chased, and this operation is very costly, as only first-class men are capable of properly finishing such work. In fact, it may be said that some of the more elegant designs in Hardware receive as much attention as a fine piece of jewelry.

Bronze finished to represent old copper is also very effective when used on light-

Please accept my check $ ..... for settlement of your invoice ..... $ .....
Less ..... Per cent ..... days .....
Less .....

Invoice ..... $ .....
..... $ .....
..... $ .....
..... $ .....
..... $ ..... $ .....
$ .....

Fig. 3.—Remittance Blank Used by Wallace Armer, Schenectady, N. Y.

wood doors, and in matter of wear is probably as durable as any. It is desirable from the fact that polishing is not necessary. Numerous other effects are attained in bronze metal finish, but are not used to any great extent except to give the purchaser the opportunity of suiting his fancy or matching some particular wood finish. Iron goods in Japan or Boston finish are quite common, but are used only where cheapness is desired. They are too often used where an otherwise tasty finish is found. These goods were never intended for anything but basement or attic trim, and the fact that many contractors apply iron trimmings, Boston finished, on an otherwise elegantly finished building is to be regretted. Bronzed iron is also a cheap finish, and this effect can be had so closely resembling real bronze that only an expert would be able to detect the difference. It is often found to be the case that bronzed iron butts have been substituted where specification called for real bronze, the difference not being noted until the iron commenced to show itself through the plates.

Aluminum has lately been added to the list of metal trimmings, but this metal, even at the latest market report of 50 cents per pound, cannot be successfully used, to say nothing as regards the working and finishing, which process is still in embryo as to desirable results.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

About the only interesting feature in this line is the revival of reports of contemplated opposition to the National Lead Trust by merchants engaged in the Paint trade and some few former corroders, whom, it is asserted, have decided to erect a large establishment in the West and two or three of smaller capacity at Eastern points. As the story goes, there are two Richmonds in the field, and should they proceed on the lines laid out in current gossip, the White Lead market may get into interesting condition in the future. There are also rumblings in the Linseed Oil market that suggest another outbreak in that line sooner or later. As yet nothing has transpired that would cause manufacturers any alarm, but the mere revival of the reports above outlined serve to cause jobbers to proceed with more than ordinary caution. Despite these conditions, however, the general distribution of leading staples and season specialties is proceeding in about the usual manner, and prices show scarcely any variation.

White Lead.—Weather conditions have favored the spread of Paint in this quarter and at nearly all points that draw supplies from the local market. This fact of itself is a favorable one to the White Lead trade, and according to current report the distribution has been helped along to a marked extent. The rumors of new corroding establishments being erected ere long, as noted above, serve to prompt extremely cautious action on the part of large jobbers, however, and it is the exception that purchases are carried much beyond what imperative wants necessitate. Corroders and manufacturers of Mixed Leads hold to former list prices, but the latter are still shaded more or less by most jobbers.

Zincs.—Some manufacturers note the receipt of more orders for American Oxide for future delivery, but the general demand is yet rather tame, most large consumers buy cautiously and jobbers take only such quantities as may be needed to keep supplies in proper shape to meet the retail trade. Among manufacturers no signs of friction are visible, nor does there appear to be any shading of old prices. In foreign brands there is merely the routine trade, with prices standing precisely as quoted for some time past.

Colors.—There is no new or particularly interesting feature to note on the market for any line of Colors. Grinders are buying the staple goods used in their line to a very fair extent and secure necessary supplies at former prices. In house painters' Colors the trade seems to be of fair volume, and while inferior quality goods sell at somewhat variable prices the market for recognized first-class goods retains very good form. Ready-mixed Paints are moving to about the usual extent for the season.

Miscellaneous.—The spot supply of Block Chalk is still ample, and for cargoes to arrive buyers and sellers are about 25¢ apart. Business is, therefore, limited. Whiting moves out steadily at former prices and Paris White fares quite as well. In Barytes, Terra Alba, Talc and China Clay operations are moderate and prices barely hold their own.

Oils and Turpentine.

Somewhat greater interest in new crude Cotton-Seed Oil for next month's delivery, a faint indication of renewed hostilities between local and out of town Linseed crushers and attempts to bring the combinations of Menhaden Oil producers and large consumers together, figure as about the only features of interest during the week under review. In no instance have any decisive results been arrived at thus far. The negotiations under way indicate that there will soon be a settled market for Cotton-Seed and Menhaden Oils, but the future of Linseed Oil seems to be shrouded in mystery.

Linseed Oil.—The price of domestic raw material has dropped considerably since the beginning of the month. Contracts for Western brands of Oil made some time ago are well along toward completion, and there are now some signs of anxiety for new orders. As a matter of fact, bids have been solicited on the latter of prices that would not have been considered two or three weeks ago, and spot lots are undoubtedly a shade cheaper. Ordinary-sized parcels can doubtless be secured at 39¢, and carload lots for delivery a little time ahead would be let go at 38¢. City crushers, however, adhere to old prices, but their sales are hardly as satisfactory now as they were earlier in the month.

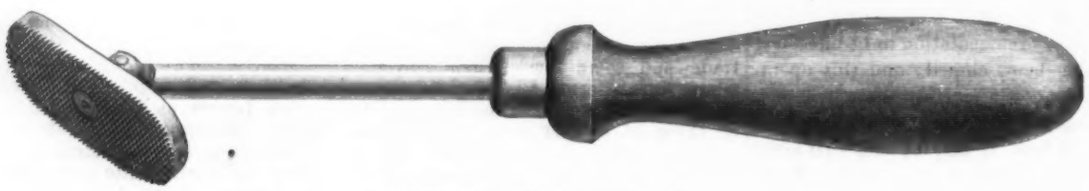
Cotton-Seed Oils.—New crop crude is 1¢ ₩ gallon higher. Two orders for 200 barrels each, for October delivery, have been placed at 31¢ for prime quality, and 30¢ is freely bid. In old crude there has been little movement, but the few trades put through were at stiff prices, one lot of nearly 100 barrels "off" grade going at 29¢. Of old refined about 1000 barrels were taken by exporters at full prices, but outside of this the only movement noted was 100 barrels prime old Summer Yellow at 38¢. In new Summer Yellow there is some negotiation at 35¢ @ 36¢ for November delivery, but no important trading thus far.

Lard Oil.—Pressers have had more or less advantage in the condition of the market for raw material, but this appears to have been offset in a good measure by sluggish demand for Oil and rather free offering of Western brands. At this writing 56¢ is an extreme outside price for best city brands, and 55¢ would probably be accepted for round lots. Western is offered at 54¢ and may be secured at a shade less.

Spirits Turpentine.—The stock in first hands here is again about 1200 barrels, and at Southern centers there is still a good supply. Demand has run along in routine manner. Prices are a trifle weaker at 38¢ for regular and 38½¢ for machine barrels.

Goodell's Shoe File.

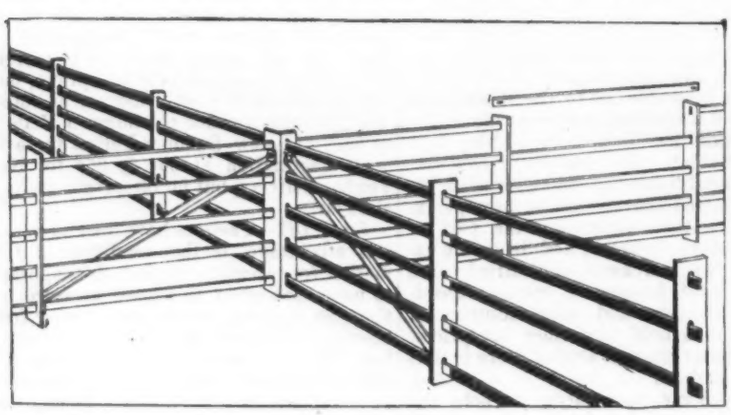
The accompanying illustration represents a shoe file, which has recently been put on the market by H. H. Mayhew & Co., Shelburne Falls, Mass. The cut represents it about two-thirds size. It is intended expressly for family use. The file is described as made of the best quality of cast steel, finely tempered, and so attached to the shank as to make it adjustable to any position. The whole tool is well finished, and has a polished hard wood handle and nickel-plated ferrule. By means of it, it is pointed out that any part of the shoe can be reached so as to remove troublesome nails or pegs. It is intended to retail for 25 cents, and is alluded to as selling readily. We are advised that the best materials only are used in getting up this tool, and it is put on the market as an article of excellent quality, which will be found admirably adapted to its use.



Goodell's Shoe File for Family Use.

A New Fence.

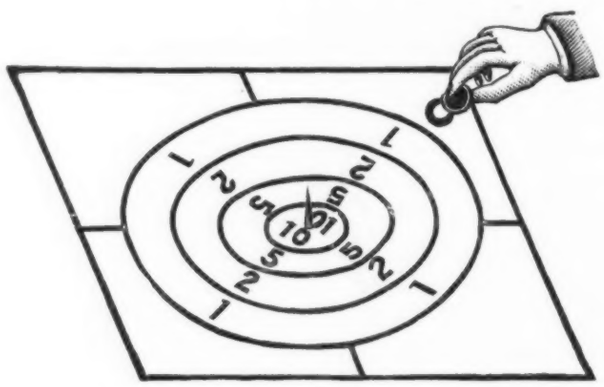
The illustration herewith given shows a fence recently put on the market by the Barnes Iron Fence Company of Philadelphia. Its low cost and the fact that it is neat, exceptionally strong and stock proof, without possibility of harm to the animals inclosed, are some of the points made in regard to the fence. It consists of an iron post with an ingeniously contrived slot and rails with lugs and sockets which lock securely in the slot in a manner so simple that no tools are required, and any laborer is capable of erecting the fence. At the corners a brace is used to stiffen it, and all labor of digging post holes is avoided as the posts are driven. The simple manner of erecting or removing the fence is referred to as adapting it for separating pasture and grain fields. Another feature of the fence is that on removing it there are no post holes left to menace the safety of the stock. Its strength is referred to as such that several panels may be suspended across a ravine or run through a water course without extra support. It is also pointed out that there is nothing about the fence to rot or burn, the wind finds little obstruction, and heat and cold do not affect it.



A New Fence.

Parlor Quoits.

Dame, Stoddard & Kendall, Boston, are putting on the market a game known as Parlor Quoits. It is shown in outline in the accompanying illustration. It consists of a piece of felt with the design of game as shown in the illustration, painted in colors, there being a pin in the center of the felt. There are 12 quoits of three different colors and four propelling disks which are used in playing. The game can be played by two, three or four persons at a time. In playing, three quoits are placed about 1 inch apart, near the corner of the felt in front of each player. The point of the game is to get the quoits on the pin, or as near to it as possible, something after the manner of the well-known game of Tiddley Winks. Rules for playing accompany each set, the whole being contained in a suitable box. This game is a recent addition to Dame, Stoddard & Kendall's athletic and sporting goods department.



Parlor Quoits.

The annual report of the English Commissioners of Customs for the year ended March 31 last gives a favorable account of the working of the Merchandise Marks act during that period. The number of detentions steadily decreases, having been 3498, as against 4167 in 1890 and 5865 in 1889. This decrease shows a marked improvement in the labeling of foreign goods, and demonstrates the fact that the foreign makers appreciate the obstacles placed in the way of false marking by the act. As for many years past, the chief offender last year was Germany, which provided some 50 per cent. of the goods which were stopped. From France there was 329 detentions, from Holland 326, from Belgium 271, from the United States 250, and 397 from other countries or colonies. Of the total detentions, which numbered 3591, 229 were retained as seizures, in addition to which 90 were seized in the parcels post.

Lightning Can Opener.

R. M. Ball, Muncie, Ind., is putting on the market this article, which is illustrated in the accompanying engraving. The point is made that by the use of this opener the can can be preserved for future use, there being no cutting necessary. The opener is dropped into the fire box of stove or range, and when hot is lifted out with stove lifter, its construction being similar to that of a stove plate. The opener is then placed over lid on can, the lid being readily unsoldered. Attention is called to the fact that the device will open wax top cans as well as those which are soldered. The very low price at which it is sold is referred to by the manufacturer as bringing it within the reach of all.

Lightning Can Opener.

The Milwaukee Bridge and Iron Works, Milwaukee, Wis., have been sold by the assignee to J. G. Wagner for $30,000.

Automatic Windmill Regulator.

The accompanying illustrations represent a windmill regulator, which is manufactured by Sandwich Enterprise Company, Sandwich, Ill. Fig. 1 shows the application of the device to ordinary windmill work, while the enlarged view, Fig. 2, presents the chief working parts in detail. The cuts together give so clear an idea of its construction and operation that but little explanation is needed. When the tank is filled the float rises and throws the regulator into engagement, when the windmill gradually pulls itself out of gear. The point is made that this is done without strain on the pump, as is the case with most hydraulic regulators. It can be adjusted to stop and start the mill when there is little or much water in the tank. It is pointed out that its use prevents unnecessary wear of both mill and pump by limiting the work performed to what is required, and that it also prevents overflow of tanks and the attendant mud and filth. The simplicity of this device and its durability, and the fact that it can be used with any of the usual styles of windmills and in all cases where the tank is within reach, are points made in regard to it.

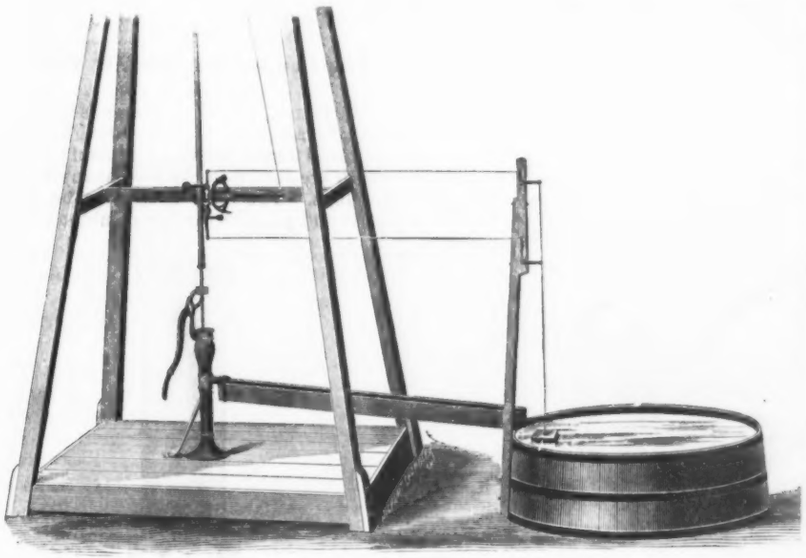


Fig. 1.—Automatic Windmill Regulator.

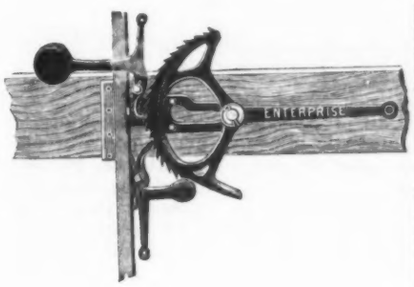
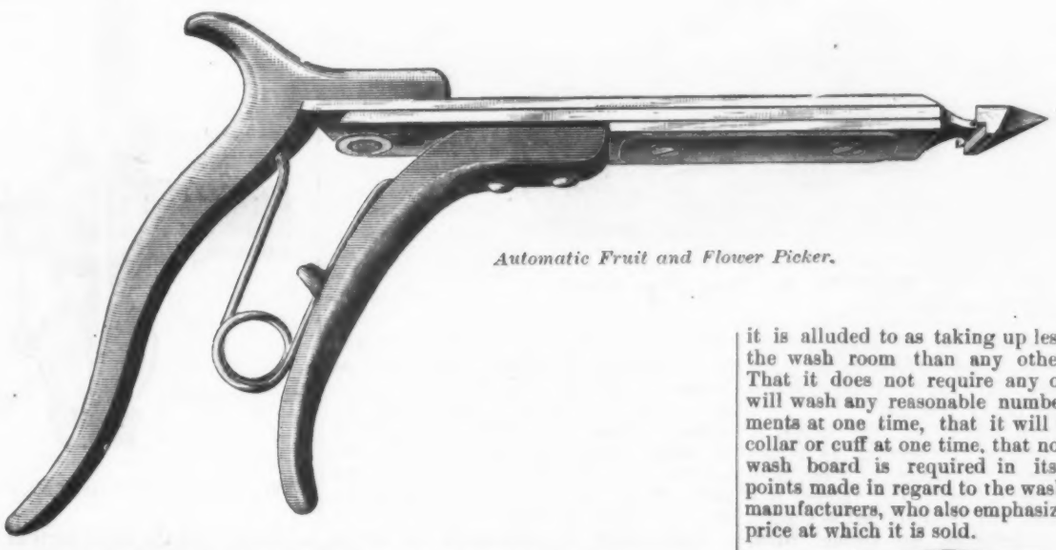


Fig. 2.—Details of Regulator.

Automatic Fruit and Flower Picker.

Caldwell Mfg. Company, Rochester, N. Y., are putting on the market the Automatic Fruit and Flower Picker, an illustration of which is herewith given. This article is designed to take the place of knife or shears in cutting all kinds of stemmed fruit or flowers. It is described as cutting the fruit clean from the twig, holding it at the same time. The convenience of the device in cutting and holding the fruit or flower is one of its special features. The cutter is made of tool steel, is simple in construction and neat in finish, and the manufacturers warrant the picker to stand hard usage better than a knife or shears. The device is especially adapted for picking grapes, oranges and pears. As the operator does not touch the fruit the bloom is not marred, and every injury resulting from handling is avoided.



Automatic Fruit and Flower Picker.

The Economy Washer.

Oval Churn Company, Goshen, Ind., are putting on the market the washer illustrated herewith. This washer, unlike most others, is intended for insertion in the tub and is not used separately. It is shown in Fig. 1 in the position in which it is placed in the tub. Fig. 2 represents it open and shows its construction. The weight of the machine is 15 pounds and it is alluded to as taking up less space in the wash room than any other device. That it does not require any oil, that it will wash any reasonable number of garments at one time, that it will wash one collar or cuff at one time, that no ordinary wash board is required in its use, are points made in regard to the washer by the manufacturers, who also emphasize the low price at which it is sold.

Fig. 1.—The Economy Washer.

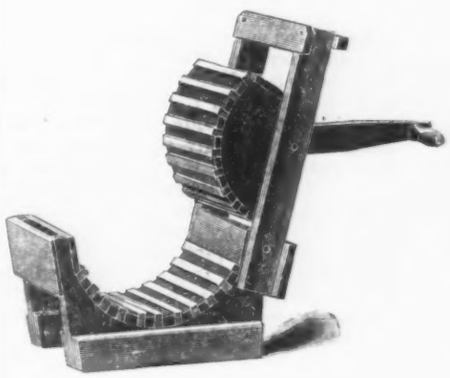


Fig. 2.—The Economy Washer, Showing Construction.

The Delaware, Lackawanna and Western Railroad is about to test the Morrell steel tie. Robert Morrell of Summit is the inventor.

Rex and Rex Junior Lawn Mowers.

W. E. Lape, Syracuse, N. Y., is offering the trade the Rex and the Rex Junior Lawn Mowers, as illustrated herewith. The side frames of the Rex, Fig. 1, which is a high-grass machine, are of gray cast iron in which are incased the driving mechanism protected from dirt with conveniences for oiling. The frames are connected by a cold die-rolled steel rod and a cast iron bed plate, which is secured by accessible adjusting screws. The bearing for the wiper shaft is 1½ inches long, its upper half only cast solid with frame. It is divided lengthwise on one side, necessitating the use of one screw only to take up wear. The tightening of the box is therefore equal throughout its entire length. The handle braces are of Bessemer steel and are readily attached by passing them under loops and over pins, all of which are cast solid with the frame. The handle is of hard well-seasoned wood and is readily adjustable to any convenient hight. The rear roller is of hard well-seasoned wood, and is attached by malleable iron brackets which are adjustable to other hights of cut. The roller is always parallel to bed knife in any position.

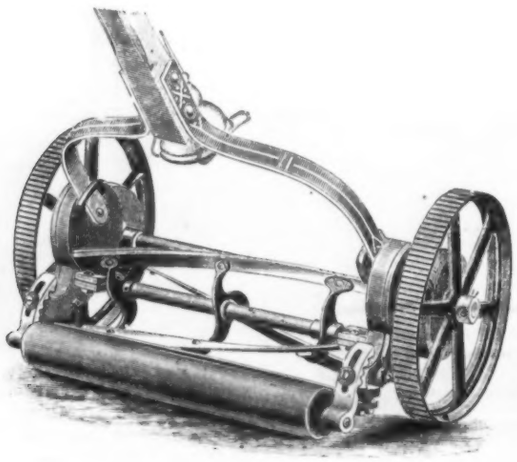


Fig. 1.—The Rex Lawn Mower.

The drive wheels are 10½ inches in diameter, with a hub bearing 2½ inches long to insure a minimum of wear, both wheels being drivers. The ratchet is a novel device, and is described as simple, strong and noiseless, no spring, balls, gravity or other uncertain devices being used. The pawls are of steel, case hardened, and travel in an axial slot in hub of drive wheels, and engage annular projections in hub of main gears. Being operated directly by drive wheels, the gears are at rest when running backward, avoiding unnecessary wear. They can be easily removed and replaced by taking off drive wheels. The pawls are interchangeable, right or left. In the cutting apparatus the stationary or bed knife is made from Sanderson's crucible steel. It has a strengthening rib in center for the screw holes. It is tempered in oil, and referred to as ground true and straight. Both front and back edges are alike, so that if one edge becomes broken it can be reversed. The cylinder or wiper is of the open type 5½ inches in diameter, containing three spiral knives of Sanderson crucible steel. These are riveted to malleable iron spider arms, the two outer of which are riveted to the shaft, making the upper stiff and strong. The shaft is of cold die-rolled steel. The wipers or spirals are rolled in a special machine to the desired pitch.

Attention has also been given to the decoration. The wheels and frame are painted white with vermilion striping. The main brace, wiper shaft and wiper arms vermilion, the wipers apple green and vermilion, and the handle braces apple green. The colors are bright, and the mower presents an attractive appearance. A screw driver and an oil-can holder are furnished free with each mower, the oil-can holder being attached to the mower in a convenient position.

Fig. 2.—The Rex Junior Lawn Mower.

Each mower is guaranteed, all being tested before leaving the factory. The Rex is made in seven sizes, 13, 15, 17, 19, 21, 23 and 25 inch. The largest size, it is claimed, can be easily operated by one man. The Rex Junior, as shown in Fig. 2, is designed to meet the demand for a mower for small lawns, embodying a high standard of material, workmanship and cutting qualities. The drive wheels are of the solid type, 7 inches in diameter, and with the side frames form a dirt-proof casing for the gearing. It is made 12, 14 and 16 inch cut.

The Improved Pierce Air Valve.

The Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., have brought out an improved form of air valve, general views of which are shown in the accompanying engravings. The valve is said to be automatic and positive, and to combine within itself all the desirable principles of the automatic air valve and a positive compression air vent. The latter can be used whenever desired without changing the adjustment of the automatic part. The automatic working part is composed of a specially made hard rubber tube, very sensitive to heat and quick to expand and contract. All the metal parts of the valve are nickel plated, both inside and out, so that corrosion is prevented. Fig. 1 shows the No. 1 valve full size, while Fig. 2 shows the No. 2 valve full size with drip connection.

Improved Pierce Air Valve.—Fig. 1.—General View of No. 1 Valve.

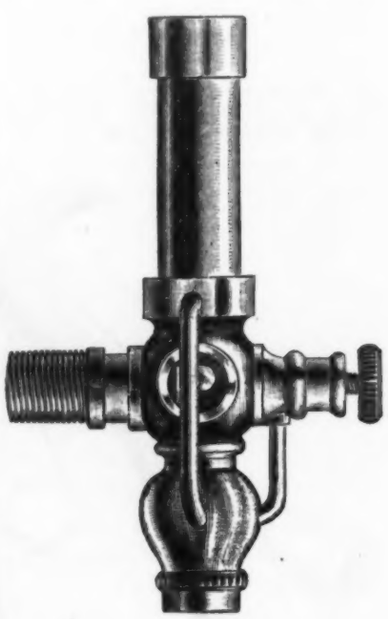


Fig. 2.—General View of No. 2 Valve.

NEW PUBLICATIONS.

THE METAL WORKER ESSAYS ON HOUSE HEATING by Steam, Hot Water and Hot Air, with Introduction and Tabular Comparisons, Arranged for Publication by A. O. Kittredge. 288 pages; 7 x 9½ inches; bound in cloth. Published by David Williams, New York. Price, $2.50.

The essays comprised in the volume are some of the results of a prize contest conducted by *The Metal Worker* some time since. They include the prize essays and selections from the best of the others. The foundation of all the essays is a house the floor plans and elevations of which were the result of previous competitions conducted by *Carpentry and Building*. The elevations and plans of this house were printed on separate sheets, adapted to receive at the contestants' hands lines indicating the position of heater, runs of pipes, location of radiators, &c., thus insuring a uniformity in presentation, and also holding different competitors to exactly the same conditions. The result, therefore, is a book in which are shown, 1, different means of heating the same house, between which may be instituted various comparisons, and, 2, several different interpretations of each of the several methods, between which also instructive comparisons may be instituted. The work is not a mere theoretical consideration of principles and a statement of facts gained by inquiry in the trade, but, instead, a collection of essays by practical men, each showing how one man would go about heating the building in question, using those means with which he is best acquainted in practice. Features of the book which are not the least important among its numerous merits are the lists of items and statements of cost accompanying the different essays. Never before in the history of the heating trades has there been such a collection of information directly from the practice of those who are actively in the business as is contained in this volume. The essays in the volume are arranged under four sections. The first relates to combination systems and includes two essays, one on a steam and warm air and the other on a hot-water and hot-air system. The second section relates to steam heating systems and covers four essays. The third treats of hot-water circulating systems, including three essays, the latter being followed by a summary of the steam and hot-water heating competition. The fourth section relates to hot-air systems, and in it are printed six essays. At the end of the volume are chapters on the location of furnaces, size of heating pipes with tables, and comparison of estimates with tables. The book is illustrated with 82 full-page plates showing the arrangement of apparatus and the runs of pipes, while marginal notes on the pages serve to index the volume and facilitate reference.

A PRACTICAL WORKSHOP COMPANION for Tin, Sheet-Iron and Copper-Plate Workers. By Leroy J. Blinn. Size 7½ x 5 inches; 296 pages. Published by Henry Carey Baird & Co. Price $2.50.

The volume before us is a new and revised edition of a book that has proven very popular with the sheet-metal working trade. It having been found necessary to make a new set of electrotypes and new engravings, the publishers took the opportunity to have the book re-edited and additional matter inserted, so that, together with the old book, the present edition presents a large amount of new material. The portion treating of metallic alloys and solder has been entirely rewritten and more systematically arranged. We notice that the present volume has nearly 300 pages, while the former edition contained but 184 pages. Also 70 new engravings have been added. The book contains rules for describing various kinds of patterns used by tin, sheet-iron and copper-plate workers; also treats of practical geometry and gives rules of mensuration of surfaces and solids. There are likewise presented tables of weights and strengths of metals and other materials, tables of areas and circumferences of circles, composition of metallic alloys and solders, with numerous valuable receipts and manipulations for every-day use in the workshop.

A New Explosive.—A new explosive named fortis is now being tested by a commission appointed by the Belgian Government. According to the reports, the trials have been especially directed toward ascertaining the capabilities of the explosive: 1, under water; 2, with simultaneous explosions in several places, and, 3, in comparative experiments with other explosives. From what can be learned it seems that fortis has proved a most striking success, and really startling results were obtained. It is considered to have a force from 30 to 40 per cent. over that possessed by any other explosive known, so much so that the results appear to have surpassed the expectations of the inventors themselves. A mine 13 feet deep was drilled in the solid rock and charged with a relatively small quantity of fortis. It detached a mass over 200 feet in hight, breaking it up in pieces of 50 to 60 pounds in weight, and projected them to a distance of 350 yards, where they nearly smashed the house of the superintendent of the quarry.

Experiments have been carried out in France, in Lot-et-Garonne, by M. Barat, upon the application of electricity to the culture of potatoes, tomatoes and hemp. A row of hemp, subjected to the influence of the electric current, produced a row of stalks 18 inches higher than those not electrified in the same time. A kilogramme (2.2 pounds) of potatoes planted in the path of the current produced 21 kg. of very large and healthy tubers, while the unelectrified patches only gave 12½ kg. of medium size. The electrified tomatoes also became ripe some eight days before the others. A curious fact has been remarked by M. Barat in his experiments. If a quantity of manure is near the positive pole, the constituent parts of this manure are transported toward the negative pole, and their effects make themselves felt around a distance of some yards. This would seem to be a fresh proof of the opinion long advanced upon the part played by electricity in the growth of plants, an opinion also adopted by M. Specnew, who has given some attention to these phonomena; this is, that the action of the electric current upon plants seems to consist in the more active dissolution of the organic principles existing in the soil which are thus brought within the reach of the roots.

The twelfth annual meeting of the American Society of Mechanical Engineers will be held in New York during the week beginning November 16.

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CURRENT HARDWARE PRICES.

SEPTEMBER 23, 1891.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' Prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic ..... ₩ doz $3.00, 33⅓%
Excelsior ..... ₩ doz $10.00 ..... 50&10&2%
Washburn's Self-Locking ..... 20&20&10%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₩ ℔ 10¢ ..... 15@15&5%
Peter Wright's ..... 11@11½¢
Armitage's Mouse Hole ..... 10½@11¢
Armitage's Mouse Hole, Extra ..... 12@12½¢
Trenton ..... 10&10½¢
Wilkinson's ..... 10½@11¢
Moore & Barnes Mfg. Co 33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00 ..... 20%
Cheney Anvil and Vise 25%
Allen Anvil and Vise, $3.00 ..... 40&10%
Star ..... 45&5%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—
Douglass Mfg. Co. ..... 70&10&5% / 70&10@70&10&5%
Wm. A. Ives & Co. ..... 70&10&5%
Humphreysville Mfg. Co. ..... 70&10&5%
French, Swift & Co. (F. H. Beecher, P. S. & W. Co) ..... 70&10&5%
Rockford Bit Company ..... 70&10&5%
Cook's, Douglass Mfg. Co. 55%
Cook's, N. H. Copper Co. 50&10@50&10&5%
Ives' Circular Lip 60%
Patent Solid Head 30%
C. E. Jenning & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30 ..... 60%
C. E. Jennings & Co., Auger Bits, ₩ set, 52½ quarters, No. 5, $5; No. 30, $3.50 ..... 20%
Lewis' Patent Single Twist 45%
Russell Jennings' Augers and Bits ..... 25&10%
Imitation Jennings' Bits ..... 60@60&5%
Snell's Jennings Pattern 60%
Pugh's Black 30%
Rockford, Jenning's Pattern 60%
Car Bits ..... 60@60&10%
Car Bits, P. S. & W. Co. ..... 60&10%
Snell's Car Bits 60%
L Hommodieu Car Bits ..... 15&10%
Forstner Pat. Auger Bits 20%
Cincinnati Bell-Hangers' Bits ..... 30&10%

Bit Stock Drills—
Morse Twist Drills ..... 50&10&5%
Standard ..... 50&10&5%
Cleveland ..... 50&10&5%
Syracuse, for metal ..... 50&10%
Syracuse, for wood (wood list) ..... 30@30&5%
Williams' or Holt's, for metal ..... 50&10&10%
Williams' or Holt's, for wood ..... 40&10%
Cincinnati, for wood ..... 30&10%
Cincinnati, for metal ..... 45&10%

Expansive Bits—
Clarks' small, $18; large, $26 ..... 35@35&10%
Ives' No. 4, ₩ doz $60 ..... 40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22 ..... 35%
Stearns' No. 2, $48 ..... 20%

Gimlet Bits—
Common ..... ₩ gross $2.75@$3.25
Diamond ..... ₩ doz $1.10 ..... 25&10%
Ives ..... 25@25&5%
Double Cut, Shemariaon's ..... 45@45&10%
Double Cut, Ct. Valley Mfg. Co ..... 30&10%
Double Cut, Hartwell's, ₩ gro $5.25
Double Cut, Douglass' ..... 40&10%
Double Cut, Ives' ..... 60@60&10%

Hollow Augers—
Ives 33⅓%
French, Swift & Co. ..... 33⅓&10%
Douglass' ..... 33⅓&10%
Bonney's Adjustable, ₩ doz $48 ..... 40&10%
Stearns' ..... 20&10%
Ives' Expansive, each $4.50 ..... 50&5%
Universal Expansive, each $4.50 ..... 20%
Wood's ..... 25@25&10%
Cincinnati Adjustable ..... 25&10%
Cincinnati Standard ..... 25&10%

Ship Augers and Bits—
L'Hommedieu's ..... 15&10@15&10&5%
Watrous' ..... 15&10@15&10&10%
Snell's ..... 15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits ..... 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls, Brad Sets, &c—
Awls, Sewing, Common ₩ gr $1.70, 45%
Awls, Should. Peg ₩ gr $2.45, 50@50&10%
Awls, Pat. Peg ₩ gr 63¢ ..... 50&50&10%
Awls, Shouldered Brad ..... 2.70 ₩ gr 35%
Awls, Handled Brad ..... $7.50 ₩ gr 45%
Awls, Handled Scratch ₩ gr, $7.50 ..... 35&10%
Awls, Socket Scratch, ₩ doz, $1.50 ..... 25&30%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @ $7.50	
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1 ..... 4½@5¼, No. 2 5½@6¼
Nos. 7 to 14 ..... 55&5% / 3% cash
Nos. 15 to 18 ..... 47½% / 3% cash
Nos. 19 to 22 ..... 70% / 3% cash
Concord Axles, loose collar ..... 5½@6¢
Concord Axles, solid collar ..... 6½@7¢
National Tubular Self-Oiling ..... 33⅓@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—

	No. 2000	20	30
Spring Balances 40%			
Chatillon, ₩ doz	$0.80	0.95	1.75 net
Chatillon Straight Balances 40%			
Chatillon Circular Balances ..... 50&10%			

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel ..... ₩ ℔ 3½¢
Iron, Steel Points ..... ₩ ℔ 3¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '82 ..... 50&10@50&10&5%
Chatillon's No. 1 ..... 40%
Chatillon's No. 2 ..... 50%
Custer's 33⅓%

Beaters—
Egg—
Dover ..... ₩ doz $1.50
Duplex (Standard Co.) ..... ₩ doz $1.25
Rival (Standard Co.) ..... ₩ doz $1.00
Duplex Extra Heavy (Standard Co.) ..... ₩ doz $3.50
Bryant's ..... ₩ gro $14.00
Double (H. & R. Mfg. Co.), ₩ gro. No. 0, $12.00; No. 1, $15.00; No. 2 ..... $36.00
Easy (H. & R. Mfg. Co.) ..... ₩ gro $12.00
Triple (H. & R. Mfg. Co.) ..... ₩ gro $16.50
Spiral ..... ₩ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.) ..... ₩ gro $9.00
Paine, Diehl & Co.'s ..... ₩ gro $24.00
Silver & Co. ..... ₩ doz $5.50
Culinary—
Keystone, P.D.&C., Each, No. 1, $1; No. 2, $2 ..... 20%

Bells—
Cow—
Common Wrought ..... 60&10%
Western ..... 20&10%
Western, Sargent's list ..... 70&10%
Kentucky, "Star" ..... 20&10%
Kentucky, Sargent's list ..... 70&10%
Kentucky Durham ..... 70&10
Dodge, Genuine Kentucky ..... 70@70&10%
Texas Star ..... 50&10@50&10&5%
Door—
Gong, Abbe's ..... 33⅓&10%
Gong, Yankee ..... 45&10%
Gong, Barton's ..... 40&10@50%
Crank, Taylor's ..... 25&10%
Crank Brooks' ..... 50&10&2%
Crank Cone's 10%
Crank, Connel's ..... 20&10%
Lever, Sargent's ..... 60&10%
Lever, Taylor's Bronzed or Plated ..... net
Lever, Taylor's Japanned ..... 25&10%
Lever, R. E. M. Co.'s ..... 50&10&2%
Pull, Brook's ..... 50&10&2%
Pull, Western ..... 25&10%
Electric,
Wollensak's 20%
Bigelow & Dowse 20%
Taylor's 20%
Hand—
Light Brass ..... 75&10%
Extra Heavy ..... 65&10%
White Metal ..... 60&10&10%
Silver Chime ..... 33⅓&10%
Globe Cone's Patent) ..... 25&10@35%
Miscellaneous—
Call ..... 40@40&5%
Farm Bells ..... ₩ ℔ 24@24¢
Steel Alloy Church and School Bells 40%

Bellows—
Blacksmiths' ..... 60&5@65%
Molders' ..... 40@40&10%
Hand Bellows ..... 40&10&50%

Belting, Rubber—
Common Standard ..... 70@70&10&5%
Standard ..... 70@70&5%
Extra ..... 60@60&10%
N.Y.B.&P.Co., Carbon 60%
N.Y.B.&P.Co., Diamond 50%
N.Y.B.&P.Co., Para 40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters 15%
Detroit Perfected Tire Bender 15%

Bits—
Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.
Bit Holders—See Holders.
Blind Adjusters—See Adjusters, Blind.
Blind Fasteners—See Fasteners, Blind.
Blind Staples—See Staples, Blind.

Blocks—
Ordinary Tackle, list May 20, 1889 ..... 70&5@70&10%
Cleveland Block Co., Mal. Iron 50%
Moore's Novelty, Mal. Iron 50%
Sure Grip Steel Tackle Blocks 25%

Boards, Stove.
Wood Lined "Crystal" 50%
"Oxidized" 45%
Embossed 50%
Paper Lined Zinc 55%
"Crystal" 50%
Embossed 55%
"New Tacoma" 55%

Bolts—
Carriage, Machine, &c.—
Com. list June 10, '84 ..... 75&10&2%
Genuine Eagle, list Oct., '84 ..... 75&10@80%
Phila. pattern, list Oct. 7, '84 ..... 75&10@80%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890 ..... 75&10@75&10&5%
Bolt Ends, list Jan. 1, 1890 ..... 75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c. ..... 70@70&10%
Cast Iron Shutter Bolts ..... 70@70&10%
Cast Iron Chain (Sargent's list) ..... 65&10%
Ives' Patent Door Bolts 60%
Wrought Barrel ..... 70@70&10%
Wrought Square ..... 70@70&10%
Wr't Shutter, all Iron, Stanley's ..... 60&10%
Wr't Shutter, Brass Knob, " ..... 40&10%
Wr't Shutter, Sargent's list ..... 60&10%
Wr't Sunk Flush, Sargent's list ..... 55&10%
Wr't Sunk Flush, Stanley's list ..... 50&10%
Wr't B.K.Flush. Com'n " ..... 55&10%
Stove and Plow—
Stove 60%
Plow ..... 60&5%
R. B. & W., Plow 55%
Tire—
Common, list Feb. 28, '83 ..... 65%
Port Chester Bolt and Nut Company: Empire, list Feb 28, '83 ..... 65%
Keystone, Philadel., list Oct. '84 ..... 80%
Norway, Phila., list Oct. '84 ..... 75%
American Screw Company: Norway, Phil., list Oct. 16, '84 ..... 75%
Eagle, Phil., list Oct. 16, '84 ..... 80%
Philadel., list Oct. 16, '84 ..... 80%
Bay State, list Feb. 28, '83 ..... 65%
R.B.&W., Philadel., list Oct. 16, '84 ..... 80%

Borers, Tap.
Common and Rind ..... 20&10%
Ive's Tap Borers ..... 33⅓&5%
Enterprise Mfg. Co ..... 30&10@30%
Clark's ..... 33⅓@35%

Borax ..... ₩ ℔ 9½@10¼¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔ ..... 2¾¢

Braces,—
American Bit Brace Co.: Nos. 10, 12, 20 ..... 60&10%
Nos. 11, 21, 24, 27 ..... 70&10%
Nos. 22, 23, 25 ..... 60&10&5%
Nos. 13, 26, 36, 37 ..... 70&10&5%
Ball Braces, net ..... $1.12 to $1.25
Amidon's: Barker's Imp'd Plain ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet ..... 75&10@80%
Eclipse Ratchet 90%
Globe Jawed ..... 40@40&10%
Corner Brace ..... 40@40&10%
Universal, 8 in., $2.10 10 in. $2.25
Buffalo Ball ..... $1.10@$1.15
Barber's, Nos. 10 to 16 ..... 50%
Nos. 30 to 33 ..... 50%
Nos. 40 to 63 ..... 50&10%
Saxton's, Barker's Imp. Polished ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet, Polished ..... 50&10@60%
Ratchet, Nickeled ..... 40&10@50%
Buffalo Ball ..... net, $1.10@$1.15
Bartholomew's, Nos. 25, 27 and 30 ..... 50&10@60&5%
Nos. 117, 118, 119 ..... 70@70&5%
Common Ball, American ..... $1.00@$1.10
Fray's Genuine Spofford's ..... 50&5@50&10%
Fray's No. 70 to 120, 81 to 123, 207 to 414 ..... 50&10%
Ives' New Haven Novelty ..... 70@70&5%
New Haven Ratchet ..... 60&5@60&10%
Barber Ratchet ..... 60&5@60&10%
Barbers ..... 60&5%
Spofford ..... 60&5@60&10%
Osgood's Ratchet ..... 40&10@50%
P. S. & W. Co., Peck's Patent 60%

Brackets—
Shelf plain, Sargent list, 55&10@55&10&5%
Shelf, fancy, Sargent's list, 60&10@60&10&10%
Reading, plain ..... 50&10@60&10&5%
Reading, Rosette ..... 60&10@60&10&10%

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz	$4.50	5.50	6.50

New Haven 50%
Wire Goods Co ..... 65&10%

Buckets, Well.
Galvanized—
Hill's ..... ₩ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad ..... ₩ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band $3.75
Helwig's Wired Top ..... ₩ doz $4.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass ..... 75&10@80%
Cast Brass, Tiebout's 50%
Cast Brass, Corbin's, Fast ..... 33⅓&10%
Cast Brass, Loose Joint ..... 33⅓&10%
Cast Iron—
Fast Joint, Narrow ..... 50&10&5@60%
Fast Joint, Broad ..... 50&10@60%
Loose Joint ..... 70&10@75%
Loose Joint, Japanned ..... 70&10@75%
Loose Joint, Jap. with Acorns ..... 70&10@75%
Parliament Butts ..... 70&10@75%
Mayer's Hinges ..... 70&10@75%
Loose Pin, Acorns ..... 70&10@75%
Loose Pin, Acorns, Japanned ..... 70&10@75%
Loose Pin, Acorns, Japanned, Plated Tips ..... 70&10@75%
Wrought Steel—
Fast Joint, Narrow ..... .70&10@75%
Fast Joint, Lt. Narrow ..... .70&10@75%
Fast Joint, Broad ..... .70&10@75%
Loose Joint, Broad ..... .70&10@75%
Table Butts, Back Flaps, &c ..... .70&10@75%
Inside Blind, Regular ..... .70&10@75%
Inside Blind, Light ..... .70&10@75%
Loose Pin ..... .70&10@75%
Bronzed Wrought Butts 50%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt ..... 5½@6¢
Burke's, One Prong, Blunt ..... 5½@6¢
Burke's, Two Prong, Blunt ..... 7½@8¢
Burke's, One Prong, Sharp ..... 6½@7¢

Can Openers—See Openers, Can.

Caps—
Percussion, ₩ 1000—
Ticks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's ..... 35@37¢
E. B. Trimmed Edge, 1-10's ..... 47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's ..... 47@50¢
Musket Waterproof, 1-10's ..... 50@53¢
G. D ..... 27@30¢
S. B. Genuine Imported ..... 45¢
Eley's E. B ..... 56¢ @ 58¢
Eley's D Waterproof, Central Fire $1.60
Primers—
Berdan Primers, $1.00 ..... 2%
S. L. Caps (for Sturtevant Shells) $1.00 ..... 2%
All other Primers, $1.20 ..... 2%

Cards—List January 28, 1891.
Watson's Cotton, Wool, Horse and File 25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—
Rim Fire Cartridges ..... 50&5&2 %
Rim Fire Military ..... 15&2 %
Cent. Fire, Pistol and Rifle ..... 25&5&2 %
Cent. Fire, Military and Sporting ..... 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75 ..... 2 %
Blank Cartridges, 32 cal., $3.50 ..... 2 %
Primed Shells and Bullets ..... 15&5&2 %
B. B. Caps, Round Ball, $1.75 ..... 2 %
B. B. Caps, Con. Ball, Swgd., $2.00 ..... 2%

Casters—
Bed ..... Brass ..... 55@55&10%
Plate ..... Others ..... 60@60&10%
Shallow Socket ..... 60@60&10%
Deep Socket ..... 40&10%
Yale Casters, list May, 1884 ..... 30&10@40%
Yale, Gem ..... 60@60&5%
Martin's Patent (Phœnix) ..... 45&10@50%
Payson's Anti-friction ..... 60@60&10%
Giant Truck Casters 30%
Stationary Truck Casters ..... 60&10%
Socket Truck Casters 50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic ..... 5 ℔ pails ₩ ℔

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890 ..... 60@60&5%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.75	5.45	4.55	4.00	3.65	3.50	3.40	3.30

Less than cask lots, add ½¢@1¢ ₩ ℔.
German Coil, list Oct. 6, 1890 ..... 60@60&5%
German Halter Chain, list Oct. 6, 1890 ..... 60@60&5%
Covert Halter ..... 60&2%
Covert Traces ..... 35&2%
Covert Heel Chain ..... 50&2%
Oneida Halter Chain ..... 60@60&5%
Galvanized Pump Chain ..... ₩ 5½@6¢
Jack Chain, Iron ..... 75&10@80%
Jack Chain, Brass ..... 75@75&10%

Chalk—
White, case lots, ₩ gr 50¢; small lots 55 @56¢
Red, case lots ..... ₩ gr 67¢; small lots 77 @78¢
Blue, case lots ..... ₩ gr 75¢; small lots 85¢
See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W. ..... 75 @ 75&10 %
New Haven ..... 75 @ 75&10 %
Witherby ..... 75 @ 75&10 %
Mix ..... 75 @ 75&10 %
Ohio Tool Co ..... 75 @ 75&10 %
Douglass ..... 75@75&5%
Buck Bros 50%
Morrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%
Tanged and Miscellaneous.
Tanged Firmers ..... 40&10@50%
Butchers' ..... $4.75@5.00
Spear & Jackson's ..... 35 to 5
Buck Bros 30%
Cold Chisels, ₩ ℔ ..... 15@16¢

Chucks—
Beach Pat ..... each, $8.00 ..... 30%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Bals Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks. Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co., Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns.
Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each, 6 gal., $2.60; 10 gal., $2.75 15 gal. $3.00 20 gal. $3.25

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Parallel, C. H. Besly & Co.....25%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25&10%

Cleavers.
Butchers'.
Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—
Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16. 65&5%
Superior Axle Clips.....66⅔&5@70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Medford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list.....30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....60&10@60%

Combs, Curry.
Fitch's.....50&10@50&10&10%
Rubber, per doz $10.00.....20%
Perfect.....50%
Kellogg's.....50&10
Sweet & Clark's.....50&10

Compasses, Dividers, &c.—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair.₩ lb, 24½@25¢
Common Russia Sash.....₩ lb, 12½@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb, 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lake—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 30¢.....10 %
B Quality, Drab, 35¢.....10 %
Sylvan Spring Extra Braided White,34¢
Sylvan Spring, Extra Braided, Drab..39¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....20¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White...₩ lb, 28¢
Wire Picture.
Braided or Twisted.....75&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—
Grain.....50&5&2@50&10&2%

Crayons.
White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr, $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain

Cutters—
Meat.
Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	B	5
Each	$5	$7	$10	$25	$50	$60

Enterprise.....30%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter.....30%

Nos.	112	116	118	130	122
Each	$2.00	$2.75	$3.00	$3.50	$4.00

Miles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1..... ₩ doz $26.00, 55&10%
Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%
Great American.....30%
Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00
Tobacco.
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $18.00 50@55%
Wilson's.....55%
Sargents's.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%
Washer.
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—
Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50&14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. 15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger, ₩ doz $30.00, 50¢
Imperial, ₩ doz $15.....45%

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.
Money, ₩ doz.....$18&$20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll s.....25%
Ratchet, Parker's.....20@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action..45@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85
Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....50%
Stanley R. & L. Co.'s
Varnished Handles.....65&10%
Black Handles.....60&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....66⅔&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50& 5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $6.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits.....₩ doz. 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 8. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb	4½¢	5 ¢	2½¢
½ kegs, ₩ lb	4½¢	5½¢	2½¢
¼ kegs, ₩ lb	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case	6 ¢	6½¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.
List No. 5.
Lathing.....10%
Fencing, Painted Sheets.....20%
Netting, Painted Sheets.....30%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—
Mackrell's, ₩ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Washburn's Old Pattern, ₩ gr.....$9.00
Merriman's.....new lis.
Austin & Eddy No. 2006 ₩ gr.....$4.00
Security Gravity, ₩ gr.....$9.00

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Beat Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $50.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ doz $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—
Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond)..... 60&10@60&10&5%
Eagle.....60&10&5@60&10&10%
Other makers, best brands60&10@60&20%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
Moss & Gamble....List, April 1 1883, 15%
Butcher.....Butcher's list, 90%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps...American list, 60%

Fixtures.
Grindstone—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—
Hay, Manure, &c., Asso List, 65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—
Saw—
White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%
Screen, Window and Door—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—
White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.
Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 dos.....35 %

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse—Dis. 12½%. ₩ 1000 ft
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr. 4.85
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—
Stebbin's Pattern.....75&10&5@80%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70@70&10%
Weed's.....20&10%
Boss, ₩ doz:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₩ gr $12.....35@25&5%

Glue—
Le Page's Liquid.....35@25&5%
Upton's Liquid.....35%
Improved Process.....35@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in bxs...₩ doz 1lb $1.20; 2 lb $2.00
Dixon's Everlasting....10-lb palls, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—
Small, at factory.....₩ ton $7.50@9.00
Family, Cleveland Stone Co.....20 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.
Hafts, Awl.
Sewing, Brass Fer. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short. $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top. ₩ gr $10.00...45&10%
Pat. Peg, Leather Top. ₩ gr $12.00.45&10%

Halters.
Covert's, Rope, Jute.....6 &10&10&2%
Covert's, Rope, 7-16-in., Jute.....70&2%
Covert's, Rope, ½-in. Hemp.....60&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10& 35%
Buffalo Hammer Co.....
Humason & Beckley.....} 50@50&10%
Atha Tool Co.....
Verree.....
C. Hammond & Son.....40&10@—%
Fayette R. Plumb, "Artisans' Choice," A. E. Nail.40&12½%
Regular "Y. & P." A. E. Nail 50%
Horseshoe Turning Hammers 60%
Other Hammers.....50&10%
Hartford, Nail Hammers.....40&2%
Hartford, Machinists, &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....30@35
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
2 lb and under.....₩ lb 40¢ }
3 to 5 lb.....₩ lb 36¢ } 70@70&10%
Over 5 lb.....₩ lb 30¢ }
Wilkinson's Smiths.....10½¢@11¢₩ lb

Handcuffs and Leg Irons—See Police Goods,

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pair, 23¢; No. 3 13¢; No. 6, 10¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢....50%
Champion.....15¢
Iron, Wrought or Cast—
Door or Thumb

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.10	1.35	1.60

.....60&10&10%
Boggin's Latches.....₩ doz 30¢@35¢
Bronze Iron Drop Latches..₩ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.52; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%
Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₩ gr $2.00
Hickory Firmer Chisel, ass'd..₩ gr 4.50
Hickory Firmer Chisel, large..₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd...₩ gr 3.00
Socket Framing Chisel, ass'd..₩ gr 5.00
I. S. Smith & Co.'s Pat File.....50%
File, assorted.....₩ gr 7 75 }
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.25
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10 %

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Wood Track.....55%
U. S. Wood Track.....65%
Champion.....60&10%
Rider and Wooster, Medina Mfg. Co.'s list.....70%
Climax Anti-Friction.....55%
Climax Anti-Friction for Wood Track.....55%
Zenith for Wood Track.....55%
Reed's Steel Arm.....50%
Challenge, Barn Door.....50%
Sterling.....50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50, No. 3, $18.00.....50&2%
Cheritree.....50&10%
Kidder's.....50&10@60%
The Boss.....60&10%
Best Anti-Friction.....60&10%
Duplex (Wood Track).....60&10&5%
Terry's Pat., ₩ dos pr. 4 in, $10.00; 5 in, $12.00.....50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered.....50@5%
Wood Track Iron Clad, ₩ ft, 10¢.....50 &15@60%
Carrier Steel Anti-Friction.....50&10%
Architect, ₩ set $6.00.....20%
Eclipse.....20&10%
Felix, ₩ set $4.50.....20%
Richards'.....30@30&10%
Lane's Standard.....50&5@50&10%
Lane's New Standard.....50@50&5%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat.....20&10@30&10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge.....25&10@25&10&10%
Faultless.....40@40&5%
American, ₩ set $6.00.....20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.....40%
Paragon, Nos. 1, 2 and 3.....40&10%
Cincinnati.....25&10%
Paragon, Nos. 5, 5½, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel Cast Iron.....50%
Nickel, Malleable Iron and Steel.....40%
Scranton Anti-Friction Single Strap33⅓%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00.....45%
Star.....40&10@40&10&5%
May.....50&5@50&10%
Barry, $6.00.....40&10%
Interstate.....50%
Magic.....40%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's } 40 & 10 @ 50&5 %
Buffalo Hammer Co.
Fayette R. Plumb.
C. Hammond & Son...
Kelly's.
Sargent & Co.
P. S. & W. Co.
Tom Eyck Edge Tool Co.
Collins.....10%
Schulte, Lohoff & Co.....50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker.....75&2%
Palmer.....50&5&10%
Seymour.....70&2%
Huffer.....60%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity.....50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12.....77&10&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible....70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....₩ dos $4.40, 60%
N. E.....₩ dos $7.00, 55%
N. E. Reversible.....₩ dos $5.20, 55&10%
Clark's, Nos. 1, 2, 3.....60&10&5%
N. Y. State.....₩ dos $5.00, 55&10%
Automatic.....₩ dos $12.50, 50%
Common Sense.....₩ dos pair $4.50, 50%
Seymour's.....45&10%
Shepard's.....60&10&5%
Reed's Latch and Hinges. ₩ dos $12.00, 50%

Spring Hinges—

Geer's Spring and Blank Butts.....40%
Union Spring Hinge Co.'s list, March 1890.....20%
Acme.....30%
C. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem, and Star.....20%
Oxford.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Wiles'.....10%
Devore's.....40%
Rex.....40%
Royal.....60%
Reliable.....60%
Champion.....60%
Bardsley's Patent.....40%
Stearn's.....50&10%
Niagara, Holdback pattern, per gross.....$14.00

Wrought Iron Hinges

List February 14, 1891.
Strap and T.....50&10%
Corrugated Strap and T.....50 & 10 %
Screw Hook and Strap..... { 6 to 12 in., ₩ lb., 4¢ / 14 to 20 in., ₩ lb.3½¢ / 22 to 36 in., ₩ lb., 3¢
Screw Hook and Eye..... { ⅛ in., ₩ lb 7½¢ / ¼ in., ₩ lb 5½¢ / ⅜ in., ₩ lb 4½¢
Rolled Blind Hinges, Nos. 22 and 24 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10%
Plate Hinges { 8, 10 & 12 in., ₩ lb.....5¢ / "Providence" { over 12 in., ₩ lb.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat. } 50&10&5 @60%
Am. Axe and Tool Co., S. & O. Pat.
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70%
Planter's, Cotton &c.....70%
Warren Hoe.....60%
Magic.....₩ dos $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat.....₩ dos $18.....60%

Bit.

Extension,
Barber's, ₩ dos $15.00.....40@40&10%
Ives, ₩ dos $20.00.....60&5@60&10%
Diagonal.....₩ dos $24.00, 40%
Angular.....₩ dos $24.00, 40&5%

File and Tool—

Bals Pat.....₩ dos $4.00; 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list.....
Bird Cage, Reading..... } 60&10&10%
Clothes Line, Sargent's list..
Clothes Line, Reading list. 60&10@60&10&10%
Ceiling Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton.....₩ dos $1.35
Cotton Pat. (S.Y. Mallet & Handle W'ks).....30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60%
Wire Coat and Hat, Miles', list April, 1886.....50%
Indestructible Coat and Hat.....45%
Wire Coat and Hat, Standard.....60%
Handy Hat and Coat.....50&10%
Steady Ceiling Hooks.....50&10%
Belt.....80@80&10%
Atlas, Coat and Hat.....60%
Bright Wire Goods, see *Wire.*

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass.....₩ dos $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks.....See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition.....75@75&5%
Standard.....60&10&5@60&10&10%
Extra.....50&10@60%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee....60&10 @ 60%

Huskers—

Blair's Adjustable.....₩ gr $8.00
Blair's Adjustable Clipper.....₩ gr 7.00
Hubbard's Solid Steel.....₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory....₩ 100 ℔, $2.30@$2.40
Self-Heating.....₩ dos $9.00 net
Self-Heating, Tailors'....₩ dos $18.00 net
Mrs. Pott's Irons.....60@60&10%
Enterprise Star Irons.....60@60&10%
XX Cold Handle Sad Iron.....50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons.....25%
R. B. Sad Irons, ₩ ℔.....3 @3½¢
Combined Fluter and Sad Iron, ₩ dos, $15.00.....15%
Fox Reversible, Self-Fluter ₩ dos $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....8¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓ %
National Self-Heating.....30 %

Soldering—

Soldering Coppers.....₩ ℔ 22 @ 23¢
Covert's Adjustable, list Jan. 1 1886. 35&2%

Irons, Pinking, per dos., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy.....40%
Victor.....40%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..75&5%
Brass, Spun, Pld. W.M.list Jan. 2, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss, Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....₩ dos $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's list Dec. 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's AAA1, Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.75; 8 in., $3.50, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ₩ dos $1.50, 15@20%
Moran's Shoe and Bread.....20%
Hay and Straw.....See Hay Knives.
Table and Pocket.....See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn Auburn Mfg. Co. Crescent.....$3.50

Corn—

Bradley's.....10%
Wadsworth's.....25%

Drawing—

Witherby.....
P. S. & W.....
Mix.....
New Haven..... } ..75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Hay and Straw—

Lightning, from jobbers....$8.00 @ $9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle.....₩ dos $11.00@$11.50
Heath's.....₩ dos $13.00@13.50
Auburn Hay, Corn, and Spear Point..50%
Auburn, Straw.....40%
Nolin's Hay.....₩ dos $7.00 @ $8.00

Mincing.

Am. (2d quality), ₩ gr., 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ₩ dos, Single, $2.00; Double, $3 40&45%
Knapp & Cowles.....50&10&60%
Buffalo Adjustable.....₩ dos $3.00 ,25%
Buffalo Double Adj'table.₩ dos $3.00 25%

Knobs—

Door Mineral.....60@65%
Door Por. Jap'd.....70@75%
Door Por. Nickel.....$2.00@2.25
Door Por. Plated, Nickel.....$2.00@2.25
Drawer, Porcelain.....60&10@60&10&10%
Hemacite Door Knobs.....40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&10%
Carriage, Jap.....₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladles—

Melting, Sargent's.....55&10%
Melting, Reading.....35&10%
Melting, Monroe's Pat...₩ dos $4.00, 40%
Melting, P. S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Plain with Guards, ₩ dos.....$3.75@4.00
Lift Wire, with Guards.....$4.00@4.25
Square Plain, with Guards....$3.75@4.00
Sq. Lift Wire, with Guards.....$4.50

Police Lanterns (including packages).

2¾-inch Bull's-eye Police regular..... ₩ dos $3.60
3-inch Bull's-eye Police regular ..... ₩ dos $3.90
2¾-inch Bull's-eye Police flash light ... ₩ dos $4.00
3-inch Bull's-eye Police flash light ..... ₩ dos $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..80%
Excelsior.....50&10& %
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50,
Mason's Colored Cotton.....45%
Wire Clothes.. Nos. 12 16 20
100 ft. $4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton..₩ dos $7.50, 20%

Links, Open.

Terry's—per gro.:
Nos..... 1 2 3 4
$6 00 8.00 12.00 16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev. Jan.1,'85..33⅓&2%
Delta, Nos. 36 to 39.....40%
Delta, Nos. 51 to 83.....40&10%
Delta, Nos. 86 to 96.....30%
Stoddard Lock Co.....30&33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&2%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar.20, 1889..... } 65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88.....
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88.....
Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40@40&10%
Yale.....net prices
Deits Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Seed's N. Y. Hasp Lock.....35%

Padlocks—

List June 10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....70&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....25&2%
Eureka, Eagle Lock Co.....40&2%
Romer's, Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 606..15%
A. E. Deits.....40%
Champon Padlocks.....40%
Hotchkiss.....30%
Star.....45%
Horseshoe.....₩ dos, $9, 40@40&10%
Barnes Mfg. Co.....40@40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90@90&10%
E. T. Fraim's Keystone Scandavian. Nos. 119, 120, 130 and 140.....90&10% Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Blaymaker Barry & Co.
No. 1010 line.....85&5%
No. 41 line.....45&10%
No. 61 line.....50&5%
No. 21 line.....75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr.. 33⅓%
Ferguson's.....33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'sed.....₩ gr $4.00
Common Sense, Nickel Plated ₩ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical".....10%
Ives' Patent.....60&10@60&10&5%
Liesche's, No. 100, ₩ gr $8, 105, $10..80%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list January, 1889..70%
Security.....70%
Buckeye.....₩ gro $4.80

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles....₩ dos, $1.75; ₩ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas	$5.50	$6.75		50%
Snell's, Price's Pat.	5.50	6.75	40&10%	
Jennings	5.50	6.75	45@45&10%	
Other Machines	2.35	2.75		
Phillips' Patent with Augers	7.00	7.50		
Miller's Falls	7.50			25%

Fluting.

Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $5.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₩ dos $12, 35%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₩ dos 18.00.....40%
Shepard Hand Fluter, No. 110 ₩ dos $11.00.....40%
Shepard Hand Fluter, No. 95 ₩ dos $8.00.....40%
Clark's Hand Fluter ₩ dos $15.00.....35%
Combined Fluter and Sad Iron. ₩ dos $15.00.....30%
Buffalo ₩ dos $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.....30%
Moore's Differential Pulley Block...40%
Energy Mfg. Co's.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51; No. 2, $45; No. 3, $42
Western Star, ₩ doz No. 2, $45; No. 3 $38

Mallets.
Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
R. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives — See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers — See Drawers, Money.

Mowers, Lawn.
Pennsylvania. New Model, Excelsior, Continental, &c.....60@60&5%
Philadelphia.....60&10%
Perfection.....60&10&10%
Easy.....60&10@60&10&5%
Bay State.....60&10@60&10& %
Other Machines.....60&10&5@70%

Muzzles—
Safety.....₱ doz. $3.00, 25 %

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, July 15, '89.75&10@80%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$2.10 @ $2.20

Horse—

Nos.	6	7	8	9	10
Ausable....	28¢	26¢	25¢	24¢	23¢.

40&5&5&2%
Clinton, Fin..19¢ 17¢ 16¢ 15¢ 14¢.....30%
Essex.....28¢ 26¢ 25¢ 24¢ 23¢. 40&5&5&2%
Lyra.....19¢ 17¢ 16¢ 15¢ 14¢.....30 %
Snowden 19¢ 17¢ 16¢ 15¢ 14¢.....30 %
Putnam.....23¢21¢ 20¢ 19¢ 18¢. 1000 ₱ in year 15%
Vulcan.....23¢ 21¢ 20¢ 19¢ 18¢..12½&5%
Northwest'n.25¢ 23¢ 22¢ 21¢ 20¢. 25@25&5%
Globe.....23¢ 21¢ 20¢ 19¢ 18¢. 20&5&5%
Boston.....23¢ 21¢ 20¢ 19¢ 18¢. 20&5&5%
A. C.....25¢ 23¢ 22¢ 21¢ 21¢. 25&10@33⅓&5%
C. B.-K.....25¢ 23¢ 22¢ 21¢ 21¢. 25&10@33⅓&5%
Maud S.....25¢ 23¢ 22¢ 21¢ 21¢. 40&10 %
Champlain ..28¢ 26¢ 25¢ 24¢ 23¢. 9%&10&10%
Saranac.....23¢ 21¢ 20¢ 19¢ 18¢...30&10%
Champion ...25¢ 23¢ 22¢ 21¢ 20¢. 10&10&10%
Capewell....23¢ 20¢ 5¢ 24¢ 23¢. 35&5@35&10%
Star.....23¢ 21¢ 19¢ 19¢ 18¢. 10&10@10&12½%
Anchor.....23¢ 21¢ 20¢ 19¢ 18¢.....35%
Western.....23¢ 21¢ 20¢ 19¢ 18¢...40&10%
Empire Bronzed.....14 ₱ ₱.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed.....	5.40¢	6.00¢ off list.
Cold Punched....	5.00¢	5.10¢ off list.

In packages of 100 ₱, add 1-10¢ ₱ ₱, net; in packages less than 100 ₱, add ½¢ ₱ ₱, net.

Oakum—
Best or Government....₱ ₱ 7@7½¢
U. S. Navy.....₱ ₱ 6@6½¢
Navy.....₱ ₱ 5½¢@6¢

Oilers—
Zinc and Tin.....65&10@70%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co.....₱ gro. $2
Steel, Draper and Williams.....50%

Openers, Can.
Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $3.00
Duplex.....doz 25¢, 15&20%
Lyman's.....₱ doz $3.75, 20%
No. 4 French.....₱ doz $2.25, 55&60%
No. 5, Iron Handle.....₱ gr $6.00, 45&50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00.
Star.....₱ doz $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50- 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50 ...&%
World's Best, ₱ gross, No. 1, $12.00 - No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....&5%
Domestic, ₱ doz $2.50.....&5%
Champion ₱ doz $2.00.....&5%

Packing, Steam—
Rubber—
Standard.....60&5@65%
Extra.....50@50&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander..... 25%
Jenkins' Standard. ₱ ₱ 80¢,...25@25&5%
Miscellaneous—
American Packing.....10¢@11¢ ₱ ₱
Russia Packing.....14¢ ₱ ₱
Italian Packing.....13¢@14¢ ₱ ₱
Cotton Packing.....15¢@17¢ ₱ ₱
Jute.....7¢@8¢ ₱ ₱

Padlocks—See Locks.

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25	
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75	
Helwig's.	2.50	2.75	3.00	
Sidney Shepard & Co.	2.35	2.85	3.05	
Iron Clad	2.50	2.75	3.00	
Fire Buckets	2.75	3.25	3.50	

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt. ₱ doz $5.40
Stable and Milk, 14 qt. ₱ doz $6.00
Fire Pails, deep. ₱ doz $5.40
" " round bottom. ₱ doz $7.80
Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails.	6.00	6.50
Horse Pails.	5.00	
Buggy Pails.	4.00	
Slop Jars (bal. trap).	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Small sizes. ₱ ₱ 6½¢
Large sizes. ₱ ₱ 5½¢
Silver & Co. (Covered). 40%
Fry—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....60&10%
Dust—
Steel Edge, No. 1.....₱ doz $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State..₱ doz 27.00 @ 30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
73.....₱ doz 4.25
78.....₱ doz. 7.00
Potato—
White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Bow—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's....$17 and $18.....60&10%
Peck, Stow & W Co... 50&10&50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain.....52½%
1¼ and under, Galvanized.....42½%
1½ and over, Plain.....62½%
1½ and over, Galvanized.....50%
Boiler Tubes.
Sizes up to 2¾ in. inclusive.....55%
Sizes 3 to 6 in. inclusive.....60%
Sizes 7 in. and up.....55%
Casing.....50%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.'s. .. 40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.).....40&10@40&10&10%
Miscellaneous Planes (Stanley R. & L. Co.).....20&10@20&10&10%
Victor Planes (Stanley R. & L. Co.). .....20&10@20&10&10%
Steer's Iron Planes.....35@35&10%
Meriden Mal. Iron Co.'s.....40@40&10%
Davis's Iron Planes.....40@40&10%
Birmingham Plane Co.....50@50&10%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....40@40&10%
Sargent's.....30&10@30&10&10%
Standard Tool Co.....50@50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros.....30%
Auburn "Thistle."
Ohio.
Sandusky.....30&10%
S. & I. J. White.
Standard.....35%

Plates.
Felloe.....₱ ₱ 6¢@6½¢

Pliers and Nippers—
Button's Patent.....50@50&10%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz.....20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 5% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List.....70&10@70&10&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₱ doz $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ₱ 8¢
Boynton's Noon Day, ₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro
Yates' Liquid, 2 3 5 10 gal.... ₱ gal ...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10-₱ cans, ₱ ₱ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ₱ cans.....12½¢
Black Jack Water Paste, 5 and 10 ₱ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gross, $7.20
Crown Paste, in 5 and 10 ₱ pails ₱ ₱ 12¢
Black Flag.....₱ gross, $7.20
Black Flag, 5 and 10 ₱ pails.....₱ ₱, 12¢
Black Flag, liquid, in bottles, ₱ gro..$8.00

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $3.50
Shepard's Queen City.....40%
Silver & Co.....₱ doz $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₱ doz $18.00, 33⅓%
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz. $13.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%
Eclipse.....each, $2.00 net

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60%&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "P" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check..40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 55%
Tinners' Hollow Punches P. S. & W. Co. 30&5%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets

Rail—
Sliding Door, Wr't Brass, ₱ ₱ 35¢.....15%
Sliding Door, Bronzed Wr't Iron. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, In. ½ ¾ 1
Per 100 feet.....$2.00 2.50 3.10, 10%

B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet....	$2.15	2.70	3.25..net

Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot.....4½¢
Moore's Wrought Iron.....35%

Rakes—
Cast Steel, Association goods...60%&@70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70@70&5%
Gibbs Lawn Rake.....$12.00, 50&10%
Canton Lawn Rake.....$9.00, 50&10%
Ft. Madison Prize Bow Brace and Peer-less.....60%
Fort Madison Steel Tooth Lawn Rake, $6.00.....35%

Razors—
J. R. Torrey Razor Co.....30%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₱ doz $15.00

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₱ doz $2.00
Top of the Hill Rings.....₱ doz $1.25
Hill's Improved Ringers.....₱ doz $1.25
Hill's Old Style Ringers.....₱ doz $1.12½
Hill's Tongs.....₱ doz $3.00
Hill's Rings.....₱ doz bxs $1.00
Perfect Rings.....₱ doz bxs $1.50
Perfect Ringers.....₱ doz $2.15@$2.25
Blair's Hog Ringers.....₱ doz $2.00
Blair's Hog Rings.....₱ doz 90¢@$1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz $2.25
Brown's Ringers.....₱ doz $2.00
Brown's Rings.....₱ doz $1.15@1.25
Electric Hog R'ngs ...₱ doz boxes $1.50
Electric Hog Ringers .....₱ doz $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60@60&10%
Coppered Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....35&2%
Stair, Black Walnut.....₱ doz 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%

Rope.
Manila...¼ in. and larger.....₱ ₱ 9¼¢
Manila.....⅜ in. ₱ ₱ 10 ¢
Manila.....½ and 5-16 in. ₱ ₱ 10¼¢
Manila Tarred Rope.....₱ ₱ 9 ¢
Manila, Hay Rope.....₱ ₱ 9½¢
Sisal.....⅛ inch and larger ₱ ₱ 6½¢
Sisal.....⅜ in. ₱ ₱ 7 ¢
Sisal.....½ and 5-16 in. ₱ ₱ 7½¢
Sisal, Hay Rope.....₱ ₱ 6½¢
Sisal, Tarred Rope.....₱ ₱ 6 ¢
Sisal, Medium Lathe Yarn.....₱ ₱ 5½¢
New Zealand..⅛ in. and larger ₱ ₱ 6½¢
New Zealand.....⅜ inch, ₱ ₱ 6¾¢
New Zealand, ½ and 5-16 inch, ₱ ₱ 7½¢
New Zealand, Hay Rope.....₱ ₱ 6½¢
New Zealand, Tarred Rope.....₱ ₱ 6¾¢
Note.—Manufacturers' prices on above ¼¢ ₱ ₱ less, f.o.b. factory.
Cotton Rope.....₱ ₱ 13½@16¢
Jute Rope.....₱ ₱ 6½@6¾¢
Wire—
List May 1, 1886.
Iron.....82½&2½%
Iron, Galvanized.....40&2½%
Cast Steel.....40&2½%

Rules—
Boxwood.....80&10&10@80&10&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—
Disston's Circular.....45%
Disston's Cross Cuts.....45%
Disston's Hand.....30%
Woodrough & McFarlin.
Hand, Panel and Rip.....25%
Narrow Champion Cross Cuts with Handles, ₱ foot.....20¢
Champion Thin Back Cross Cuts, ₱ foot.....28¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....31¢
One Man Champion Cross Cuts, ₱ foot.....40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....30%
Narrow Champion Cross Cuts with Handles, ₱ foot.....20¢
Champion Thin Back Cross Cuts, ₱ foot.....28¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....31¢
One Man Champion Cross Cuts, ₱ ft. 40
Atkins' Circular Shingle and Heading Saws 50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 32¢
Atkins' Champion and Electric Tooth X Cuts.....₱ foot 30¢
Atkins' Hollow Back X Cuts..₱ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill.....45%
Peace Hand Panel and Rip.....25%
Peace Cross Cuts.....45%
Richardson's Circular and Mill.....45%
Richardson's X Cuts.....45%
Richardson's Hand, &c.....25%
C. E. Jennings & Co., Hand, Panel and Rip.....25

Hack Saws—
Grimm's, complete.....40&10@50%
Grimm's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Scroll—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—
Hatch, Counter, No. 171, good quality, ₩ doz $21.00
Hatch, Ten, No. 161....₩ doz $6.75@7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Richie Bros.' Platform.....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting.....45%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.50.....30&10%
Box, 1 Handle.....₩ doz $4.00. 10%
Box, 2 Handle.....₩ doz $6.00. 10%
Defiance Box and Ship.....20&10%
Foot.....50&10@60%
Ship, Common .....₩ doz $3.50 net
Ship, R. I. Tool Co.....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood .....25&10@25&10&5%
Lag, Blunt Point, list Jan. 1, 1890. 75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890.....75@75&10%
Bed .....25&5%
Hand Rail, Sargent's.....60&&10%
Hand Rail, H. & F. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Cork—
Humason & Beckley Mfg. Co..40&10@50%
Williamson's.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Machine—
Flat Head, Iron.....55%
Round Head, Iron 50%

Wood—
List January 1, 1891.
Flat Head Iron.....72½% } Extra 10 & 10&5 % often given.
Round Head Iron.....67½%
Flat Head Brass.....72½%
Round Head Brass.....65 %
Flat Head Bronze.....72½%
Round Head Bronze.....65 %
Rogers' Drive Screws.....33⅓%

Scroll Saws—See Saws, Scroll.

Scythes.
Grain.....40&5@40&10%
Grass.....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.
Aiken's Sets, Awls and Tools, No. 20, ₩ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $6.....25@25&10%
Miller's Falls Adj. Tool Hdls.,
Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...₩ doz $6.50
Brad Sets,
No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Excelsior:
No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%

Nail—
Square.....₩ gr., $4.00@4.25
Round.....₩ gr. $3.25
Buck Bros.....27½%
Cannon's Diamond Point..₩ gr., $12, 20%

Rivet,
Regular list.....50&10%

Saw—
Stillman's Genuine...₩ doz $5.00@7.75, 40&5%
Stillman's Imita.....₩ doz $3.25@5.25, 40&5@40&10%
Common Lever .....₩ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10@50%
Leach's . No. 0, $8 00; No. 1, $15, 15@20%
Nash's 20&10@20&10&10
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10%
Aiken's Imitation.....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star. 25%
Leopold.....40&10@50%
Atkin's Lever.....₩ doz No. 1, $6.00
Atkin's Criterion.....₩ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00.....40&10%
Avery's Saw Set and Punch.....50%
Chieftain Co.'s Superior.....₩ doz $7 00
Chieftain Co.'s Royal.....₩ doz $7 50
Crescent... ....₩ doz $3.00

Sharpeners, Knife.
Parkins.
Applewood Handles....₩ doz $6.00, 40%
Rosewood or Cocobolo.₩ doz $900, 4[illegible]

Shaves, Spoke.
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....30&10%
Cincinnati.....25&10%
Goodell's, ₩ doz $9.00.....25%

Shears—
American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....33⅓%
Cast Steel Trimmers:
First quality.....80@80&10%
Second quality.....50&10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....10%
Clipper.....10&10%
Victor Cast Shears.....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Davenport Cutlery Co .....60@60&10%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list. 60%
Galvanic, 3½ to 9 in, ₩ doz, $1.00 ₩ inch

Pruning Shears and Hooks.
Disston's Combined Pruning Hook and Saw.....₩ doz $18.00, 20&10%
Disston's Pruning Hook, ₩ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₩ doz $3.75@4.00
Henry's Pruning Shears, ₩ doz $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₩ doz $12.00, 20%
Dunlap's Saw and Chisel, ₩ doz $3.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co.....60%

Tinners', &c.—
Shears and Snips (P. S. & W.).....20@25%
Snips, J. Mallinson & Co.....33⅓%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list..... .....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%

Sliding Shutter—
R. & E. list Dec. 18, 1885 .....60&10&2%
Sargent's list.....60&10%
Reading list .....60&10&10%

Shells—
First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Prize.....40&2%
Star, Club, Rival and Climax brands, 33⅓&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—
Standard List, July 19, 1890..40&10&10%

Ship Tools—
L. & I. J. White.....20&5%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phoenix and Bryden's Boss, at factory. $4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—
Add $1 ₩ keg to above prices.

Ox, Wrought—
Ton lots. .....₩ ₵ 9¢
1000 ℔ lots.....₩ ₵ 9½¢
500 ℔ lots.....₩ ₵ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-℔ bag....$1.42		$1.47
Drop, up to B, 5-℔ bag...	.35	.36
Drop, B and larger, 25-℔ bag	1.67	1.72
Drop, B and larger 5-℔ bag	.40	.41
Buck and Chilled, 25-℔ bag	1.67	1.72
Buck and Chilled, 5-℔ bag	.40	.41
Dust Shot, 25-℔ bag.....	2.00	2.05
Dust Shot, 5-℔ bag.....	.45	.46

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron. .....50&10%
Griffith's C. S. .....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
H. M. Myers Co.....50 %
Payne Pettebone & Son.....33⅓&25%
Remington's (Lowman's Pat.)50&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—
Iron Head .....60&10@60&10&5%
Brass Head.....60&10&10%

Sieves—
Mann's Tin Rim.....50&25%
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.00
Electric.....₩ gr $21.00
A. & W. Sifters.....₩ doz 2.00
Hunter's.....₩ doz $2.00
Smith's Adjustable Sifters ....₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	80¢	$1.00
Mesh 20, Nested, ₩ doz..	95¢	1.10
Mesh 24, Nested, ₩ doz..	$1.15	1.25

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel...Special net prices
Coldbrookdale Iron Co.....60%
Seneca Falls Pattern.....60%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Slates—
School, by case.....50&10@50&10&10%

Snaps, Harness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....60&10%
Hotchkiss.....10%
Andrews.....50%
Sargent's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&10&5&2%
Covert, New Patent.....50&10&5&2%
Covert, New R. E.....60&10&5&2%
Covered Spring.....60&10&10%

Snaths, Scythe.
List.....60@..%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.
Standard Fiberwares—
Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. 5X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co... .....33⅓&2%
Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers.....40&15%
C. Rogers & Bros.....40&15%
Rogers & Bro.....40&15%
Reed & Barton.....40@40&5%
Wm. Rogers Mfg. Co.....40, 15&5%
Simpson, Hall, Miller & Co.....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son.....50&12½%
Miscellaneous.
Holmes & Edwards Silver Co.:
No. 67 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50&5%
No. 49 Nickel Silver.....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal.....50, 10&5%
18% Rogers' German Silver.....60&5%
22% Rogers' Nickel Silver. .....50&5%
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891.....60%&5% cash
Boardman's Britannia Spoons, case lots.....60&5% cash

Springs—
Door.—
Torrey's Rod, regular size....₩ doz $1.80
Gray's, ₩ gr., $20.00.....20%
Bee Rod ₩ gr., $20.00.....20%
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30.....40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's....No. 1, ₩ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₩ doz, $4.50...55&10%
Hercules.....50%
Shaw Door Check and Spring.25&50&35%

Carriage, Wagon, &c.—
Elliptic, Concord, Platform and Half Scroll.....60&10&10%
Cliff's Bolster Springs.....25%

Squares—
Steel and Iron..... } .80&10@80&10&10%
Nickel-Plated..... }
Try Square and T Bevels...60&10@60&10 &10%
Disston's Try Square and T Bevels.....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor 50%

Squeezers.
Fodder.—
Blair's.....₩ doz $2.00
Blair's "Climax".....₩ doz $1.25
Lemon—
Porcelain Lined, No. 1....₩ doz $6.00, 25&30%
Wood, No. 2.....₩ doz $3.00, 35%
Wood, Common.....₩ doz $1.70@1.75
Dunlap's Improved .....₩ doz $3.75, 20%
Samuels....No. 1, $5.00; No. 2, $9; 12, $18 ₩ doz.....25&10%
Jennings' Star.....₩ doz $2.50
The Boss.....₩ doz $2.50
Dean's..Nos. 1, ₩ doz $6.50; 2, $8.35; 3, $1.90; Queen, $2.50
Little Giant.....50@50&5%
King.....40&5%
Hotchkiss Straight Flash....₩ doz $12.00
Silver & Co., Glass .....₩ gro. $9.00
Manny Lemon Juice Extractor:
Standard.....₩ doz $0.75@$1 00
Improved.....₩ doz $5.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.
Blind—
Barbed, ½ in. and larger.....₩ ₵ 7@7½¢
Barbed, ¼ in. .....₩ ₵ 8@8½¢
Fence Staples, Galvanized. } Same price as B'rb'd Wire
Fence Staples, Plain..... } See Trd. Rep.
₩ doz $5.00

Steelyards.....40&10@50%

Stocks and Dies—
Blacksmith's
Waterford Goods.....10@40&10%
Butterfield's Goods.....10@40&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates....33½&5@40%
Reversible Ratchet.....30 %
Gardner.....25%

Stops, Bench.
Morrill's.....₩ doz $9, 50%
Hotchkiss's.....₩ doz $5. 10@10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....₩ doz $3.....10%
Cincinnati.....25&10%

Stone—
Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 22@23¢
Washita Stone, No. 1.....₩ ℔ 19@20¢
Washita Stone, No. 2.....₩ ℔ 12@13¢
Washita Slips, No. 1, Extra..₩ ℔ 44@46¢
Washita Slips, No. 1.....₩ ℔ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 13¢
Lake Superior Slips, Chase.....₩ ℔ 20¢
Seneca Stone, Red Paper Brand.....₩ ℔ 15@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Whets..₩ gro $34.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.
Cast Steel, Polished.....₩ doz $2.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Jullard's.....25@25&10%

Strops, Razor—
Genuine Emerson.....60@60&5%
Imitation " ....₩ doz $2.00, 20@10&5%
Torrey's.....20%
Badger's Belt and Com.....₩ doz $2.00
Lamont Combination.....₩ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89.50%
Electric.....List net

Stuffers or Fillers, Sausage—
Miles' "Challenge," ₩ doz $20, 50&50&5%
Perry .....₩ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co.....20&10@30%
Silver's.....40&10%

Sweepers, Carpet.
Bissell No. 5.....₩ doz $17.00
Bissell No. 7 New Drop Pan.₩ doz $19.00
Bissell, Grand.....₩ doz $36.00
Grand Rapids.....₩ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Improved Parlor Queen,
Nickeled..₩ doz $27.00
Japanned..₩ doz $24.00
Excelsior .....₩ doz $22.00
Garland .....₩ doz $18.00
Parlor Queen... ... .₩ doz $24.00
Housewife's Delight..... ....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King .....₩ doz $20.00
Weed, Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog-Wheel.....₩ doz $16.00
Easy.....₩ doz $32.00
Monarch.....₩ doz $22.00
Goshen.....₩ doz $21.00
Ladies' Friend..... .....₩ doz $15.00
Advance .....₩ doz $18.00
Supreme.....₩ doz $32.00

Tacks, Brads, &c.—

List October 19, 1889. Old established standard weights Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued..... 75 %
American, Tin'd and Cop'd..77½ %
Steel, Bright and Blued....72½ %
Steel, Tinned and Coppered 75 %
Swedes Iron, Blued. .....72½ %
Swedes Iron, Tinned.....75 %
American Iron Tacks—
Domestic..... 72½ %
Foreign.....75 %
Swedes Iron Tacks—
S. S., Blued.....75 %
S. S., Tinned.....77½ %
Lanc., Blued.....67½ %
Lanc, Tinned.....72½ %
Gimp and Lace Tacks—
S. S., Blued .....75 %
S. S., Tinned.....77½ %
Lanc., Blued .....66⅔ %
Lanc., Tinned.....72½ %
Basket and Trimmers' Tacks—
Lanc .....65 %
S. S.....70 %
Hungarian Nails.....66⅔ %
Miners' Tacks, S. S .....70 %
Miners' Tacks, Lanc .....70 %
Common and Patent Brads .66⅔ %
Leathered Tacks.....2d %
Brush Tacks.....50 %
Looking Glass Tacks.....50 %
Picture-Frame Points.....50 %
Finishing Nails.....66⅔ %
Trunk and Clout Nails—
Black .....66⅔ %
Tinned or Coppered.....66⅔ %
Basket Nails .....66⅔ %
Chair Nails.....62½ %
Cigar-Box Nails .....50 %
Tin Capped Nails.....50 %

Regular discount 10&2 %, cash. On some of these goods extra 10&5 % is often given.

Miscellaneous—
Double Pointed, 120 count.....85&10%
Wire Carpet Nails .....50&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, B. & E. Mfg. Co.'s list .....50&10%

Tapes, Measuring—
American.....40@40&5%
Spring.....40%
Chesterman's, Regular list.....25@30%

Thermometers—
Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale—Steel
Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....30%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%
Lumber.
Ring Peavies, "Blue Line"...₱ doz $20.00
Ring Peavies, Common.....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies....₱ doz $19.00
Cant Hooks, "Blue Line"...₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft, $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₱ doz $18.00
Saw.
Atkins' Perfection.....₱ doz $12.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant.....₱ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters—See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10@5%
Mouse and Rat—
Mouse Wood, Choker, ₱ doz holes, 11@12¢
Mouse, Round Wire.....₱ doz $1.50, 10%
Mouse, Cage, Wire.....₱ doz $2.50, 10%
Mouse, Catch-'em-alive....₱ dz $2.50 15%
Mouse, Bonanza.....₱ doz $0.90@$1.00
Rat, Decoy.....₱ gr $10.00, 10%
Ideal.....₱ gr $10.00
Cyclone.....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 90¢; in full cases, ₱ doz.....75¢
Hotchkiss Imp. Rat Killer..₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer.....₱ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₱ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz. 55&10%
Douglas'.....₱ doz $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering.....25%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 18, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.52@54¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....15½¢
3-Ply Hemp, 1 ℔ Balls.....16¢@16½¢
3-Ply Hemp, 1½ ℔ Balls.....15¢@15½¢
Cotton Wrapping, 5 Balls to ℔...15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6½¢@64½¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....50&10@50&10&5%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....20@25%
Simpson's Adjustable.....40%
Moore's.....20%
Massey Quick Action.....20@25%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....60%&10%
Hopkins'.....₱ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Miscellaneous.
Combination Hand Vises.....₱ gr $42.00
Cowell Hand Vises.....20%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40%

Wads—Price per M.

J.M.C.&W.R.A.—B.E., 11 up...	68¢
J.M.C.&W.R.A.—B.E., 9&10...	82¢
J.M.C.&W.R.A.—B.E., 8.....	96¢
J.M.C.&W.R.A.—B.E., 7.....	$1.10
J.M.C.&W.R.A.—P.E., 11 up..	1.15
J.M.C.&W.R.A.—P.E., 9&10..	1.50
J.M.C.&W.R.A.—P.E., 8.....	1.70
J.M.C.&W.R.A.—P.E., 7.....	1.80
Zley's B.E., 11 up.....	$1.70@$1.75
Zley's P.E., 11@20.....	3.00@3.25

Dis. 20&2½

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....70&10@70&10&5%
Boilers and Saucepans.....50&10@60%
Tinned Boilers and S'pans...50&10@60%
Rustless Hollow-Ware.....50@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11½ in.		4.00
Cuspidors		5.00
Spittoons, "Daisy," 8 in.	4.00	4.50
Peck Measure	4.00	
Half-peck Measure	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₱ doz.....$8.40
Basins, Ringed, ₱ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest.....$2.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set.....$1.60
See also *Pails.*
Silver Plated, Hollow—
4 mo. or 5% cash in 30 days.
Reed & Barton, Meriden Britannia Co., Simpson, Hall, Miller & Co., Rogers & Brother, Hartford Silver Plate Co., William Rogers Mfg. Co.....40&5%

Washers—

Size hole	5-16	⅜	½	⅝ to 1⅜
Washers	6	5	3.50¢	3

In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-lb boxes 1¢ to list.

Wedges—
Iron.....₱ ℔ 3½¢
Steel.....₱ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₱ ton $18@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $3.25; 10 in., $2.70; 12 in., $2.8[illegible]

Wire and Wire Goods—
Iron—
Market, Br. & Ann., Nos. 0 to 18.....77½%
Cop'd, Nos. 0 to 18.....75%
Galv., Nos. 9 to 18.....67½%
Tin'd, Tinned list Nos. 0 to 18.....67½%
Stone, Br. and Ann'd, Nos. 16 to 18....77½%
Bright and Ann'd, Nos. 19 to 26.... 80%
Br. and Ann'd, Nos. 27 to 36.....82½%
Tinned.....
Tinned Broom Wire, 18 to 21, ₱ ℔.....5¢
Galvanized Fence, Nos. 8 and 9.....70%
Brass, list Jan. 18, 1884.....33%
Copper, list Jan. 18, 1884.....35%
Annealed Wire on Spools.....55%
Malin's Steel and Tin'd on Spools.....55%
Malin's Brass and Cop. on Spools.....45%
Tate's Spooled, Tinned and Annealed.55%
Tate's Spooled Cop. and Brass.....45%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to $, 30%
Steel Music Wire, 12 to 30...60@70¢ ₱ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.
Bright Wire Goods—
Standard list.....30&10
Wire Cloth and Netting.
Painted Screen Cloth, good quality ₱ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.
F.o.b. cars Pittsburgh and Cleveland, $2.75 ₱ cwt. for Painted, $3.25 for Galvanized.
5¢ ₱ cwt. advance on above f.o.b. cars Cincinnati and Allentown, Pa.
10¢ ₱ cwt. advance for f.o.b. cars Joliet and Chicago.
15¢ ₱ cwt. advance for f.o.b. cars St. Louis.
35¢ ₱ cwt. advance for f.o.b cars Omaha.
35¢ ₱ cwt. advance for f.o.b cars Lawrence, Kan.
$1.25 ₱ cwt. advance for f.o.b. cars San Francisco.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&2%
Coes' "Mechanics'".....50&10&2%
Girard Standard.....55&10%
Lamson & Sessions' Engineers'..50&10%
Lamson & Sessions' Standard....70&10%
P. S. & W. Agricultural, Girard Agricultural, Lamson & Sessions' Agric'l..75&10@75 10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₱ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70%
Walker's.....55&2%
Diamond Steel.....55&2%
Cincinnati Brace Wrenches.....35&10%
Tafts' Vise Wrench.....55&10&2%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..2% cash

Wrought Goods—
Staples, Hooks, &c., list Jan. 12, 1886, 85@85& 10

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	42	@	..
Linseed, City, boiled.....	45	@	..
Linseed, Western, raw.....	40	@	..
Lard, City, Extra Winter..	58	@	..
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1....	42½@		45
Lard. City. No. 1.....	37½@		40
Lard, Western. prime.....	55	@	..
Cotton-seed, Crude, prime,	..	@	30
Cotton-seed, Crude, off grades.....	25	@	28
Cotton-seed, Summer Yellow, prime.....	38	@	39
Cottonseed, Summer Yellow, off grades.....	32	@	36
Sperm, Crude.....	.	@	67½
Sperm, Natural Spring.....	..	@	..
Sperm, Bleached Spring....	..	@	..
Sperm, Natural Winter.....	73	@	75
Sperm, Bleached Winter...	78	@	80
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	56
Whale, Bleached Winter...	56	@	58
Whale, Extra Bleached.....	58	@	60
Sea, Elephant, Bleached Winter.....	63	@	64
Menhaden, Crude, Sound...	..	@	30
Menhaden, Crude, Southern	@		..
Menhaden, Light Pressed..	31	@	32
Menhaden, Bleached W'ter.	33	@	34
Menhaden, Extra Bleached	35	@	36
Tallow, City, prime.....	4¼	@	..
Tallow, Western, prime....	..	@	..
Cocoanut, Ceylon.....	6¼@		6¾
Cocoanut, Cochin.....	7¼@		7½
Cod, Domestic.....	32	@	33
Cod, Foreign.....	..	@	..
Red Elaine.....	36	@	38
Red Saponified.....₱ ℔	5	@	5¼
Bank.....per gal	30	@	..
Straits.....	31	@	..
Olive, Italian, bbls.....	61	@	65
Neatsfoot, prime.....	55	@	65
Palm, prime, Lagos....₱ ℔	6	@	6½

Mineral Oils.

Black, 29 gravity, 25@30 cold test.....per gal	7¼@		8
Black, 29 gravity, 15 cold test.....	8½@		9
Black, 29 gravity, summer.	6½@		7
Cylinder light, filtered....	15	@	20
Cylinder, dark, filtered....	12	@	15
Cylinder, dard, st'm refined	10	@	18
Paraffine, 23¼@24 gravity.	13¼@		14
Paraffine, 25 gravity.....	12½@		13
Paraffine, 28 gravity.....	9½@		10
Paraffine, red, 21@22 gr'ty	13	@	..
Paraffine, red, 22½@23 gr'ty	13	@	14

Paints and Colors.

Barytes, Foreign, ₱ ton.	$22.00	@	$24.00
Barytes, Amer. floated...	30.00	@	32.00
Barytes, Amer. No. 1....	19.00	@	20.00
Barytes, Amer. No. 2.....	13.00	@	16.00
Barytes, Amer., No. 3.....	11.00	@	12.00
Blue, Celestial.....₱ ℔	6	@	8
Blue, Chinese	50	@	55
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk.	3.10	@	..
Carmine, No. 40, in boxes or barrels.....	3.20	@	..
Carmine, No. 40, in ounce bottles.....	4.20	@	..
Chalk, in bulk..₱ ton.	..	@	2.00
Chalk, in bbls..₱ 100 ℔.	33	@	40
China Clay, English..... ₱ ton.	13.00	@	18.00
Cobalt Oxide, prep'd....	2.90	@	....
Cobalt Oxide, black.. lots 100 ℔.	2.60	@	....
Cobalt, Oxide, black..... less 100 ℔.	2.65	@	....
Green, Paris, in bulk.....	14	@	15¼
Green Paris, 170@175 ℔ kegs.....	14½@		15¾
Green, Paris, small pack.	16	@	21¾
Green, Chrome, ordinary	8	@	11
Green, Chrome, pure....	22	@	25
Lead, Eng., B.R. white....	8½@		10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔...		@	7¼
Kegs, lots 500 ℔ to 5 tons....		@	7
Kegs, lots 5 tons to 12 tons..		@	6¾
Kegs, lots 12 tons and over..		@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....		@	¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6½@		7¼
Lead, Red, kegs.....	6¾@		7½
Litharge, kegs.....	6¾@		7½
Litharge, bbls. and ½ bbls.....	6½@		7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½% cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.25	@	1¼
Ocher, French Washed.....	1½@		2¼
Ocher, German Washed...	1½@		3
Ocher, American.....	½@		1½
Orange Mineral, English...	9	@	9½
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	9½@		10
Orange Mineral, American.	8	@	8½
Paris White, English Cliffstone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½@		7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₱ 100 ℔.	1.00	@	1.25
Red, Venetian, English....	1.00	@	1.50
Sienna, Italian, Burnt and Powd.₱ ℔	5	@	6½
Sienna, Ital., Burnt Lumps	1½@		3½
Sienna, Ital., Raw, Powd..	5	@	6½
Sienna, Ital., Raw Lumps..	2	@	3½
Sienna, American, Raw....	1½@		1¾
Sienna, American, Burnt and Powdered.....	1½@		1¾
Talc, French	1½@		1½
Talc, American..... ..	1	@	1½
Terra Alba, Fr'ch. ₱ 100 ℔	20	@	1.00
Terra Alba, English	50	@	60
Terra Alba, American No. 1	70	@	75
Terra Alba, American No. 2	40	@	50
Umber, Turkey, Bnt. and Powd., ... ₱ ℔	3½@		4
Umber, Turkey Bnt. In	2½@		3
Umber, Turkey, Raw and Powdered, ...	3½@		
Umber Turkey, R'w Lmps	2½@		3½
Umber, Turkey, Bnt. Amer.	1½@		1¾
Umber, Turkey, R'w Amer.	1½@		1¾
Yellow, Chrome.....	10	@	25
Vermilion Americ. Lead..	11½@		17
Vermilion, Quicks'er, bulk.	64	@	66
Vermilion, Quicks'er, bags.	65	@	67
Vermilion Quicksilver, smaller pkgs.....	69	@	71
Vermilion English Import	50	@	55
Vermilion, Imitation, Eng.	8	@	25
Vermilion, Trieste.....	87½@		90
Vermilion, Chinese.....	90	@	95
Whiting, Common. ₱ 100 ℔	40	@	45
Whiting, Gilders'.....	50	@	55
Zinc, American, dry....₱ ℔	4½@		5
Zinc, French, Red Seal.....	..	@	8½
Zinc, French, Green Seal..	..	@	8½
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal...	..	@	7½
Zinc, Antwerp, Green Seal	..	@	8½
Zinc, German, L. Z. O....	..	@	6¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½@		11½
lots less than 1 ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	10	@	10½
Lots of less than 1 ton....	10½@		10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1%; 25 bbls, 2%, 50 bbls, 4%. No discount allowed on less than bbl. lots.

Colors in Oil.

Blue, Chinese.....₱ ℔	35	@	40
Blue, Prussian.....	39	@	45
Blue, Ultramar.ine.....	12	@	18
Brown, Vandyke.....	7	@	12
Green, Chrome..	8	@	13
Green. Paris.....	16	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In wooden pails.....	....	@	.01¼
In tin cans.....	.02	@	.02½
In bladders.....	.02	@	.02½

Spirits Turpentine.

In regular bbls.....	38½@		..
In machine bbls.....	38½@		..

Glue.

Low Grade.....₱ ℔	8	@	10
Cabinet.....	12	@	14
Medium White.....	13	@	15
Extra White.....	17	@	20
French.....	10	@	22
English.....	10	@	15
Irish.....	12	@	..

CURRENT METAL PRICES.

SEPTEMBER 23, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 2 in. round and square.. } 1 to 6 in. x ⅝ to 1 in... ..... }	₩ ℔ 2.00 @ 2.10¢
Refined Iron:	
¾ to 2 in. round and square. } 1 to 4 in. x ⅝ to 1½ in.... ... } 4½ to 6 in. x ⅝ to 1 in. .... }	₩ ℔ 2.10 @ 2.30¢
1 to 6 in. x ¼ and 5-16	₩ ℔ 2.30 @ 2.50¢
Rods—¾ and 11-16 round and sq.	₩ ℔ 2.20 @ 2.40¢
Bands—1 to 6 x 3-16 to No 12 ...	₩ ℔ 2.40 @ 2.60¢
"Burden Best" Iron, base price.	₩ ℔.... ...3.00¢
Burden's "H. B. & S." Iron, base price.....	₩ ℔.. .....2.80¢
"Ulster"	₩ ℔..... 3.00¢
Norway Bars.....	4.00¢
Norway Shapes...	5.0 ¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....₩ ℔ 3.00	@ 3.00¢	3.35 @	.....¢
17 to 20. ....₩ ℔ 3.15	@ 3.25¢	3.35 @	3.75 ¢
21 to 24.....₩ ℔ 3.35	@ 3.35¢	3.60 @	. ¢
25 and 26...₩ ℔ 3.55	@	3.60 @	.....¢
27.... .....₩ ℔ 3 50	@ 3.62½¢	3.85 @	.....¢
28.....₩ ℔ 3.65	@ .....¢	4.10 @	.....¢
	B. B.		2d qual.
Galv'd, 14 to 20, ₩ ℔, 4.75	@ ...	4.60 @	..... ¢
Galv'd, 21 to 24, ₩ ℔, 5.12	@ ...	5 00 @	.....¢
Galv'd, 25 to 26, ₩ ℔, 5.50	@ ...	5.35 @	.....¢
Galv'd, 27..... ₩ ℔, 5.90	@ ...	5.70 @	.....¢
Galv'd, 28 ... ₩ ℔, 6.25	@ ...	6.10 @	.....¢
Patent Planished	₩ ℔ A 10¢		B, 9¢
Russia.....	₩ ℔ 10½¢ @ 11¢		
American Cold Rolled B. B.....	₩ ℔ 5¢ @ 7¢		
Craig Polished Sheet steel.....	₩ ℔, 8½¢		

English Steel from Store.

Best Cast.....	₩ ℔ 15 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged Cast.....	₩ ℔ 16 ¢
Best Double Shear.....	₩ ℔ 15 ¢
Blister, 1st quality.....	₩ ℔ 12 ¢
German Steel, Best.....	₩ ℔ 10 ¢
2d quality.....	₩ ℔ 9 ¢
3d quality.....	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality..... ...	₩ ℔ 15 ¢
2d quality..	₩ ℔ 14 ¢
3d quality.....	₩ ℔ 12½¢
R. Mushet's "Special".....	₩ ℔ 48 ¢
" " "Titanic"	₩ ℔ 20 ¢

METALS.

Tin.

	Per ℔
Banca, Pigs.....	22½¢
Straits, Pigs.....	22 ¢
Straits in Bars.....	24 ¢

Tin Plates.

						Per box.
		Charcoal Plates.—Bright.				
Melyn Grade...	IC,	10	x 14..	....	@	$6.75
" "	....IC,	12	x 12..	....	@	7.00
" "	....IC,	14	x 20..	....	@	6.75
" "	.... IC,	20	x 28..	....	@	13.70
" "	....IX,	10	x 14..	....	@	8.25
" "	....IX,	12	x 12..	....	@	8.50
" "	....IX,	14	x 20..	....	@	8.25
" "	....IX,	20	x 28..	....	@	16.50
" "	.... DC,	12½	x 17..	....	@	6.25
" "	.... DX,	12½	x 17..	. ..	@	7.75
Calland Grade....	IC,	10	x 14..	....	@	6.70
" "	....IC,	12	x 12..	....	@	6 95
" "	....IC,	14	x 20..	....	@	6.60
" "	....IX,	10	x 14..	....	@	7.85
" "	.... IX,	12	x 12..	....	@	8.20
" "	....IX,	14	x 20..	....	@	7.85
Allaway Grade..	IC,	10	x 14..	....	@	6.35
" "	..IC,	12	x 12..	....	@	6.50
" "	..IC,	14	x 20..	....	@	6.35
" "	..IC,	20	x 28..	....	@	12.40
" "	..IX,	10	x 14..	....	@	7.50
" "	..IX,	12	x 12..	....	@	7.80
" "	..IX,	14	x 20..	....	@	7.50
" "	..IX,	20	x 28..	. ..	@	15.00
" "	..DC,	12½	x 17.	....	@	6.80
" "	. DX,	12½	x 17..	6.00	@	7.00
		Coke Plates.—Bright.				
Steel Coke.—IC,		10	x 14, 14 x 20..	...	@	$5.70
			10 x 20..	....	@	8.10
			20 x 28..	....	@	11 70
	IX,	10	x 14, 14 x 20..	....	@	6.60
BV Grade.—IC,		10	x 14, 14 x 20..	....	@	5.70
		Charcoal Plates.—Terne.				
Dean Grade.—IC,		14	x 20.....	...	@	$5.60
			20 x 28.....	....	@	10.75
	IX,	14	x 20.....	....	@	6.80
			20 x 28	....	@	12.50
Abecarne Grade.—IC,		14	x 20....	...	@	5 40
			20 x 28....	....	@	10.75
	IX,	14	x 20	....	@	6.35
			20 x 28....	....	@	12.35

Tin Boiler Plates.

IXX, 14 x 26.....112 sheets.....	@ $13.50
IXX, 14 x 28.....112 sheets....	@ 13.75
IXX, 14 x 31... ....112 sheets	@ 15.25

Copper.

DUTY: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 35 ₰ ad valorem.

Ingot

Lake...	@ 13 ¢
Ansonia Grade Arizona	@ 12½¢
Ansonia Grade Casting	@ 12 ¢

Sheet and Bolt.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per square foot and prices per pound.							
30	72	—	18	18	18	19	20	21	24	26
30	—	72	18	18	18	19	21	23	27	....
36	96	—	18	18	18	.0	22	26	29	....
36	—	96	18	18	19	21	24	27	31	....
48	96	—	18	18	20	22	24	28	....	....
48	—	96	18	18	21	23	25	29	....	....
60	96	—	18	18	23	25	30	....	....	....
60	—	96	18	19	24	....	....	....	....	....
84	96	—	19	20	....	....	....	....	....	....
84	—	96	20	21	....	....	..	..	....	....
Over 84 in. wide			21	23	...	....	....	....	....	....

All Bath Tub Sheets....	16 oz.	14 oz.	12 oz.	10 oz.
Per pound.....	$0.23	0.25	0 27	0.31

Bolt Copper, ¾ inch diameter and over, per pound..... 18¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier.....	22¢
12 ounce and up to 14 ounce to square foot....	23¢
10 ounce and up to 12 ounce.....	25¢
Lighter than 10 ounce.....	28¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each.....	8¢
Tinning sheets on one side, 30 x 60 each.....	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each.	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each.....	12¢
Tinning sheets on one side, other sizes, per square foot.....	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier.	24¢ ₩ ℔
14 oz.....	25¢ ₩ ℔
12 oz.....	27¢ ₩ ℔

Seamless Brass and Copper Tubes.

Sept. 16, 1891.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1¼
8-14	6-12	35	31	28	27	26	25	22
15	13	36	31	29	28	27	26	23
16	14	37	32	30	29	28	27	23
17	15	38	33	31	28	29	28	24
18	16	40	34	32	30	29	28	25
19	17	41	35	33	32	31	30	27
20	18-19	42	37	35	34	33	32	29
21	20	44	39	37	36	35	34	32
22	21	46	40	39	37	36	35	34
23	22	48	42	40	39	38	37	37
24	23	51	44	42	41	39	38	39
25	24	54	47	44	43	42	41	43

Copper Bronze and Gilding Tube, 3¢ ₩ ℔ additional.

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch.....	45¢
Plain, 5-16 inch.....	45¢
Plain, ¼ inch.....	60¢
Plain, 3-16 inch.....	$1.00
Plain, ⅛ inch.....	1.50
Fancy Tubing, Brass, to No. 20, inclusive.....	45¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list.....	30 @ .. ₰

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive...	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24.	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26.....	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28..... ...	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38	in. 38 / 40
To No. 20, inclusive...	.36	.39	.42	.46	.50	.55	.60	.65
Nos. 21, 22, 23 and 24.	.37	.40	.43	.47	.51	.56	.61	.66
Nos. 25 and 26.....	.38	.41	.44	.48	.52	.57	.63	.71
Nos. 27 and 28.....	.39	.42	.45	.49	.53	.58	.65	.75

Brass and Copper Wire.

Old English guage standard.	Com. high brass. Per ℔.	Low brass. Per ℔.	Gildi'g br'se & copper Per ℔
All Nos. to No. 16, inclusive....	$0.22	₩ 26	$0.30
No. 17 and No. 18.....	.23	.27	.31
No. 19 " " 20.....	.24	.28	.32
No. 21.....	.25	.29	.33
No. 22.....	.26	.30	.34
No. 23.....	.28	.32	.36
No. 24.....	.30	.34	.38
No. 25.....	.32	.36	.40
No. 26.....	.35	.39	.43
No. 27.....	.38	.42	.46
No. 28.....	.42	.46	.51
No. 29.....	.45	.49	.54
No. 30.....	.48	.52	.62
No. 31.....	.51	.55	.67
No. 32.....	.55	.59	.73
No. 33.....	.59	.63	.82
No. 34.....	.64	.68	.95
No. 35.....	.70	.74	1.30
No. 36.....	.76	.80	1.50
No. 37.....	1.00	1.04	1.70
No. 38.....	1.30	1.34	2.00
No. 39.....	2 00	2.00	3.25
No. 40.....	2.60	2.60	5.75

Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs.

	Per ℔.		Per ℔.
No. 5.....	49¢	No. 11.....	56¢
No. 6.....	49¢	No. 12..... ..	58¢
No. 7.....	4½¢	No. 13.....	60¢
No. 8...	50¢	No. 14.....	65¢
No. 9.....	52¢	No. 15.....	70¢
No. 10.....	54¢		

Tobin Bronze—Rods.

¼ inch and larger.....17¢ ₩ ℔, net

Tobin Bronze—Piston Rods.

1½ inch and smaller.....	18¢ ₩ ℔, net
Over 1½ inch.....	20¢ ₩ ℔, net

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.	
Western Spelter	5¼¢ @ 5¾¢
Bertha (pure)	8¾¢ @ 9 ¢

Zinc.

Duty; Sheet, 2½¢ ₩ ℔.	
600 ℔ casks.....	7¼¢
Per ℔	7¾¢

Lead.

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.	
American	4¾¢ @ 5¢
Bar.....	5¼¢ @ 5½¢
Pipe, subject to trade discount....	7¢
Tin-Lined Pipe, subject to trade discount.....	15¢
Block Tin Pipes, subject to trade discount...	37½¢
Sheet, subject to trade discount.....	7¾¢

Solder.

½ @ ½ (Guaranteed)...	14¢
No. 1.....	12¢
Extra Wiping.....	11¾¢ @ 14¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson.....	₩ ℔ .... @ 13 ¢
Hallett's.....	" .... @ 11 ¢

ALUMINUM.

Prices in Ingots.

In lots of 2000 ℔ and over.....₩ ℔ .50¢

Old Metals.

(Prices Paid in New York.

Heavy Copper.....	₩ ℔ 12 ¢
Light Copper.....	₩ ℔ 11 ¢
Heavy Brass.....	₩ ℔ 10 ¢
Light Brass.....	₩ ℔ 8 ¢
Lead.....	₩ ℔ 4 ¢
Tea Lead.....	₩ ℔ 3½¢
Zinc.....	₩ ℔ 3 ¢
No. 1 Pewter.....	₩ ℔ 16 ¢
No. 2 Pewter	₩ ℔ 8 ¢
Wrought Scrap Iron.....	₩ gross ton $19.00
Heavy Cast Scrap.....	₩ gross ton 12.00
Stove Plate Scrap.....	₩ gross ton 8.00
Burnt Iron.....	₩ gross ton 6.00